VDO Chart Plotters

_ MAP 7 V GPS
_ MAP 7 cs GPS
_ MAP 7 W/Wi/Plus GPS
_ MAP 11 csE/Plus GPS

www.vdo-marine.com

CHART PLOTTER NAME	DESCRIPTION	SOFTWARE
MAP 7w Plus GPS	*7" Sunlight Readable WVGA Color Display* *External Smart GPS Receiver & Video Input*	S4egVD8wc
MAP 7wi Plus GPS	*7" Sunlight Readable WVGA Color Display* *Internal GPS Receiver & Video Input*	S4igVD8wc
MAP 7cwi Plus GPS	*7" Sunlight Readable WVGA Color Display* *Internal GPS Receiver & Fish Finder & Video Input*	S4igVD8wc
MAP 11csE Plus GPS	*11" Sunlight Readable Color Display* *External Smart GPS Receiver & Video Input*	S5egVD11c
MAP cx Plus GPS	*Controller* *External Smart GPS Receiver & Video Input*	S5egVDctc

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User Manual

code: (E1600-050309e)

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About this User Manual

INTRODUCTION

The chart plotter is a state-of-the-art computerized electronic chart system, designed as a sophisticated navigation aid. User friendly operations make the chart plotter easy to operate. All calculations and information necessary for navigation are performed and displayed on the screen quickly and accurately providing all of the facilities of a conventional GPS but with the added benefit of a powerful electronic chart display. The cartographic information is obtained from C-MAP By Jeppesen C-CARD (cartography data cards) that are available through your local dealer. For additional information on C-MAP By Jeppesen Cartography visit web site at **www.jeppesen.com**.

CONVENTIONS USED

Throughout this User Manual, the labelled keys are shown in capital letters enclosed in square brackets, for example **[ENTER]**.
Menu operations are in bold characters listed by keys sequence with the menu names enclosed between inverted commas, for example **[MENU] + "OTHER MAP CONFIGURATIONS" + [ENTER]** means: press the [MENU] key, using the cursor key select the Other Map Configurations menu and then press [ENTER].

Any menu operation and function activation in this User Manual is related to all chart plotter models. Whenever it is necessary, a note has been inserted for those models with differences.

EXPERT FUNCTIONS

It is possible to expand the functions set available on the chart plotter. When the chart plotter comes from factory or after a RAM Clear (see Chapter 8), only those menus/items are visible, which are of importance for the basic functions. Due to this, the chart plotter handling has been considerably simplified for the majority of users.
Also there are functions which are rarely used, the *Expert Functions*. **These are need to be activated before their use**.
The Expert Functions can be activated selecting the About page (see Par. 4.6) and then pressing **[MODE]** for 1 second.
The items shown in gray color are the basic functions, they are always active and visible in the chart plotter menus. The others are the Expert Functions; you could turn from "Off" to "On" for making visible the desired function in the chart plotter menus, and then for using in the chart plotter handling.
For example, the Cursor Control function is an Expert Function. To **activate** it follow this procedure:

- **[MENU] + [MENU] + "About..." + [ENTER] + [MODE] for 1 second + "MENU" + [ENTER] + "ADVANCED SETTINGS" + [ENTER] + "SIMULATION" + [ENTER] + "CURSOR CONTROL" + [ENTER] + "ON" + [ENTER]**

Then, this function is shown in the Simulation Menu, and you could enable or disable it:

- **[MENU] + [MENU] + "ADVANCED SETTINGS" + [ENTER] + "SIMULATION" + [ENTER] + "CURSOR CONTROL" + [ENTER] + "ON" + [ENTER]**

Throughout this User Manual, the Expert Functions are shown as **FunctionName**[E], for example Cursor Control[E]. Remember that it is possible to show these functions into a chart plotter menu **only if** they have been activated.

HOW THIS USER MANUAL IS ORGANIZED

- **CHAPTER 1: Overview**
  Introduction to the basic information on your chart plotter, its features and use.
- **CHAPTER 2: Getting Started**
  Overview of the controls and how to start using the chart plotter.
- **CHAPTER 3: Operations**
  Description of the operation procedures of the chart plotter in detail.
- **CHAPTER 4: User Setting Up**
  Set up of the chart plotter, the charting preferences and the GPS options.
- **CHAPTER 5: C-Link**
  C-Link system is a feature which allows to sharing the same cartographic data between two chart plotter units linked via serial I/O port.
- **CHAPTER 6: Mobilarm System**
  Mobilarm system is an automated crew monitoring system dedicated to monitoring onboard crew by maintaining a constant link between the crew member and the boat.
- **CHAPTER 7: Fish Finder (MAP 7cwi Plus GPS)**
  Introduction to the basic information on the internal Fish Finder, its features and use.
- **CHAPTER 8: Maintenance**
  User maintenance guidelines.
- **CHAPTER 9: Terms**
  List of the terms and abbreviations used in the User Manual.
- **MAP 7w Plus GPS & MAP 7wi Plus GPS**
  Introduction to the basic information on MAP 7w Plus GPS/MAP 7wi Plus GPS chart plotter, its features and use. Installation of the chart plotter.
- **MAP 7cwi Plus GPS**
  Introduction to the basic information on MAP 7cwi Plus GPS chart plotter with internal Fish Finder, its features and use. Installation of the chart plotter.
- **MAP 11csE Plus GPS**
  Introduction to the basic information on MAP 11csE Plus GPS chart plotter, its features and use. Installation of the chart plotter.
- **MAP cx Plus GPS**
  Introduction to the basic information on MAP cx Plus GPS controller, its features and use. Installation of the controller.

Analytical Index is to be found at the end of this User Manual.

IF YOU NEED ASSISTANCE

If your chart plotter does not operate properly, please refer to Chapter 8. Most common operating difficulties can be diagnosed using these tests.
If you still need assistance, call your local dealer, reporting the information available in the System Information page.

Important Information

WARNING

Electronic charts displayed by the chart plotter are believed to be accurate and reliable, but they are not intended to replace official charts which should remain your main reference for all the matters related to the execution of a safe navigation. For this reason we would like to remind you that you are required to carry on board and use the officially published and approved nautical charts.

CAUTION

- Please read through this manual before the first operation. If you have any questions, please contact the Company's customer service or your local dealer.
- The chart plotter is not built water proof. Please give attention to avoid water intrusion into the chart plotter. Water damage is not covered by the warranty.
- Extensive exposure to heat may result in damage to the chart plotter.
- Connection to the power source with reversed polarity will damage the chart plotter severely. This damage is not covered by the warranty.
- The chart plotter contains dangerous high voltage circuits which only experienced technicians MUST handle.
- The C-MAP By Jeppesen C-CARDs are available from your local dealer.
- Exposure of the display to UV rays may shorten the life of the liquid crystals used in your plotter. This limitation is due to the current technology of the LCD displays.
- Avoid overheating which may cause loss of contrast and, in extreme cases, a darkening of the screen. Problems which occur from overheating are reversible when temperature decreases.

WARNING ON SERIAL PORTS CONNECTION

Please be aware that the serial ports are not opto-isolated and then the external device is electrically connected to the chart plotter. This allow the connection of high speed devices, like Radar or Fish Finder. If you are connecting a NMEA0183 device and you would like to isolate it from the chart plotter, you have to add the opto-isolator externally.

CLEANING PROCEDURE FOR THE PLOTTER SCREEN

Cleaning of the plotter screen is a very important operation and must be done carefully. Since the surface is covered by a antireflective coating, the procedure for cleaning all the surfaces can be performed in the following procedure. You need a tissue and a cleaning spray containing Isopropanole (a normal spray cleaner sold for the PC screen, for example PolaClear by Polaroid). Fold the tissue or lens tissue into a triangular shape, moisten the tip and use the index finger behind a corner to move the tissue across the surface, in overlapping side to side strokes. If the tissue is too wet, a noticeable film will be left in its path and you will need to repeat the process. If too dry, the tissue won't glide easily, and may damage the surface.

NOTE *We will not be liable for errors contained herein, or for incidental or consequential damages in connection with the performance or use of this material.*

Safety Instructions

Please respect all instructions of this manual.

The use of the chart plotter system does not relieve you of your responsibility for your ship, which requires good seamanship.
Always use your personal experience when interpreting the displayed values.

Safety Instructions concerning the installation

The chart plotter system should be installed by your shipyard or by a electronic specialist.

Use adeguate working clothes when you install the system. Avoid clothing that may be caught by moving parts. Use a hair net if you have long hair.

Remove all metallic or electrically conducting jewellery, such as chains, bracelets, rings, etc. when you working on the on-board electronics.

Disconnect the minus polarity at the battery before starting your work to prevent the risk of a short-circuit. Short-circuits can cause cable harness fires, battery explosions and damages of electronic memory systems. Please note that when you disconnect the battery, all volatile electronic memories will lose their contents, and will have to be re-programmed.

Run the engine compartment blower for a certain time before starting work in a gasoline engine compartment.

Check that there is enough room behind the installation opening. Pre-drill the opening and complete with keyhale saw (respect the safety instructions of the hand of tool manufacturer).

Use insulated tools if you must work disabling the power supply.

The electrical outputs of the chart plotter and the cables connected to it must be protected against direct contact or damage. This means that the cables must have a sufficient insulation resistence or voltage rating, and that touching the contact points is prevented.

Electrically conducting parts of the connected loads must also be protected by adequate measures against a direct contact. The use of non-insulated wires and contacts is strictly forbidden.

Safety Instructions concerning the maintenance

Reapairs of the chart plotter system components can only be made by specialists authorized by VDO. The system fulfills the applicable safety regulations.

Note: Capacitors in the unit can reatin their charge, even if the unit is separated from its power supply.

Check that replacement fuses are of the indicated type and current rating. The use of temporarily repaired fuses or jumpering the fuse holder is strictly forbidden.

1. Overview

1.1 CHART PLOTTER

KEY	DESCRIPTION	ctc	7w/wi	11csE
Cursor Key	in the display screen moves the cursor quickly and accurately	x	x	x
	in the menu page(s) scrolls the desired option	x	x	x
	in Home mode, allows to exit from Home mode	x	x	x
	in Video mode, UP/DOWN adjust the Brightness	x		x
	in Video mode, LEFT/RIGHT adjust the Color	x		x
POWER	turns On/Off the chart plotter	x	x	x
	activates the backlight and contrast menu	x		x
	in Video mode, activates the Adjustment Mode	x		x
LIGHT	adjusts the backlight of the display		x	
	in Video mode, activates the Adjustment Mode		x	
CONTRAST	adjusts the contrast of the display		x	
	in Video mode, activates the Adjustment Mode		x	
MODE	selects the screen configuration you wish	x	x	x
	in Video mode, changes the Contrast	x		x
CLEAR	if you are into a menu, exits from menu or leaves a menu without making changes	x	x	x
	if you are not into a menu, sets the Home mode: the cursor is centered on ship's position	x	x	x
	for 1 second activates the Video Input 2			x
ENTER	if you are in chart page, opens a menu to place Marks, Waypoints, Goto, EBL & VRM	x	x	x
	if you are in chart page, opens a menu to place MOB	x	x	x
	if you are into a menu, confirms selection	x	x	x
	for 1 second activates the Video Input 1	x		x
MENU	opens the Map menu	x	x	x
	if pressed twice selects the Functions menu	x	x	x
ZOOM IN	increases the chart scale and zooms in on your display	x	x	x
	in Video mode, adjusts the Hue Phase	x		x
ZOOM OUT	decreases the scale and shows a wider view	x	x	x
	in Video mode, adjusts the Hue Phase	x		x

1.2 C-MAP By Jeppesen MAX CARTOGRAPHY INFORMATION

MAX is a major evolution of the product technology. Key points are:

Data Features

- **ISO Certification** *(electronic chart production process with quality certification)*
- **Extra Large Coverage** *(all the C-MAP By Jeppesen electronic chart detail and a huge coverage without having to change cartridge)*

- **Official data source** *(data based on use of official data sources)*
- **Detailed World Background** *(worldwide background chart with details)*
- **Depths & Land Elevation** *(color shading of sea depth and land altitude for improved chart reading)*
- **Bathymetric & Spot Soundings** *(additional Data Base with depth and bathy information for an extraordinary view of the seabed depth)*
- **Detailed Port Plan** *(complete port and marina charts with detail)*
- **Search & Find** *(quickly locates chart contents and objects)*
- **Tides Preview** *(dynamic simulation of tides)*
- **Dynamic Currents** *(current arrows dynamically display direction and speed)*
- **Dynamic Nav-Aids** *(displays Nav-Aids in true color and with real interval lighting)*
- **Port Info** *(all the information of the available services in the ports and how to contact them)*
- **Enhanced Port Info & Roads** *(details of the available facilities and services in ports and surrounding areas)*
- **Object Info** *(indicates restricted area details and related information)*
- **Quick Info** *(full information on objects, buoys, wrecks, shoals and Nav-Aids)*
- **Photos & Diagrams** *(high definition pictures of ports, piers, bridge diagrams and nav-aids)*
- **Multilanguage Support** *(displays charts in the local character set)*
- **True-Type Font** *(improves text on chart for optimal reading)*

Presentation Features

- **Clear View** *(advanced legibility techniques providing more chart data on the screen)*
- **Clear Info** *(sophisticated "Human Dictionary" to translate Nav-Aid abbreviations found on paper charts)*
- **Dynamic Nav-Aids** *(an innovative and dynamic presentation mode)*
- **Flexi-Zoom** *(increased Under and Over Zoom between chart levels, resulting in optimal scale display for any situation)*
- **Dynamic Elevation Data** *(optimized palettes including the NOAA color palette)*
- **Perspective View** *("Real World" perspective view of the chart, updated real-time during navigation)*
- **Smooth-Zoom** *(smooth transition of cartographic levels)*
- **Enhanced Turbo-Zoom** *(extra fast cartography level change displaying the most important cartographic objects)*
- **Enhanced Mixing Levels** *(seamless data presentation)*
- **Off-line redraw** *(cartography level transition without image construction)*

Cartographic Data related Features

- **Guardian Alarm** *(automatic control and alarm over obstacles on charts in front of your boat)*
- **Safety Toolbar** *(interactive alarm system for situational awareness on screen)*
- **Safety Route Check** *(sophisticated function checking dangerous objects along your navigation route)*

MAX and NT/NT+ C-CARD coexistence

- When NT+ data and MAX data cover different areas, the chart plotter gets data from both charts (depending on the current position).
- When NT+ data and MAX data cover the same area, the chart plotter gets data only from MAX chart.

1.3 GPS

For centuries, sailors have been searching for a reliable and precise method of travelling the world's waterways. From celestial navigating to the modern navigation techniques as Loran, Decca Navigator, Omega or Transit Satnav, each system has had its problems with weather, range and reliability. Without doubt, the *"Global Positioning System",* or GPS for short, is the most significant advance in navigation: it gives the navigator a position 24 hours a day, 365 days a year in any weather condition.

GPS is a satellite based navigation system which provides suitably equipped users with accurate position, velocity and time data. Originally the GPS, developed by the U.S. Department of Defence, was conceived for military purposes, but now it is used in a host of civilian applications. GPS navigation uses satellite signals to determine your position in relation to a set of satellites orbiting the earth. The GPS constellation of satellites continuously send radio signals, containing the precise position for each satellite back to earth. By knowing the position of 3 or 4 satellites and calculating various time differences between transmitted signals, the GPS receiver can determine its present position anywhere on earth, and thanks to continuous updates, calculate speed and course information.

How GPS works

Currently, the GPS constellation consists of 26 orbiting satellites (including 3 spares), but this number will increase in the future.

The GPS receiver computes an accurate position by calculating the distance to the GPS satellites that orbit the earth. Signals are required from 3 satellites for two dimensional (2D) position calculation whilst 4 satellites are required for three dimensional (3D) position calculation. As mentioned earlier, GPS satellites are not geostationary, but they are orbiting the earth as illustrated on the following figure:

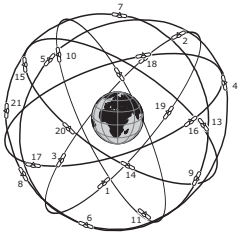


Fig. 1.3 - The GPS constellation

Note that position is repeatedly fixed through the following three steps while any 3 satellites are in line of sight.

The position calculation procedure is indicated in the following three steps:

1. GPS satellites continuously transmit their own precise orbital data and the GPS receiver computes their locations by receiving this data.
2. In this receiving process, the GPS receiver measures very accurate distances to the satellites, using the "Spread Spectrum Modulation" method. Excellence in GPS's position-fixing accuracy is mainly due to this technology.

3. When the satellite locations and their distances are known, the GPS receiver fixes its own position by triangulation:

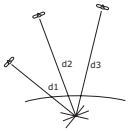


Fig. 1.3a - The GPS position calculation

As illustrated in the previous figure, the position is calculated as the meeting point of three spheres which are drawn around the three satellites with diameters d1, d2 and d3.

Position Fixing Accuracy: HDOP

The GPS fix accuracy is due to the locations of 3 satellites in the sky. High accuracy is obtainable when the satellites are widely scattered in the sky; on the contrary, accuracy is reduced when the satellites have gathered in a narrow space.
In the following figure, in both cases it is possible to obtain the GPS fix, but in the left case the accuracy will be higher than the right:

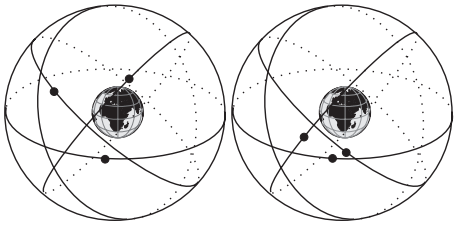


Fig. 1.3b - HDOP

The index for position-fixing accuracy is called HDOP (*"Horizontal Dilution Of Precision"*). The smaller the HDOP value, the more accurately the position can be fixed.

2. Getting Started

This chapter provides basic information to get you started using the chart plotter; it will help you in becoming familiar with the chart display and the functions of the controls before you start using the chart plotter.

2.1 SWITCHING ON/OFF

Before powering On the chart plotter, check for the correct voltage (10-35 volt dc) and the correct connections with the positioning instrument.

Switching On

- **[POWER] for 1 second**

The chart plotter shows you the logo screen, Caution Notice and then the chart screen in sequence. The chart plotter will then perform a short self test procedure that checks all internal memory and the C-CARD (if installed), and then displays any failure detected on the screen.

Switching Off

- **[POWER] for 3 seconds**

A countdown timer appears on the screen, if you release the key before the countdown timer reaches zero, the chart plotter will remain On.

2.2 CHANGING BACKLIGHT AND CONTRAST

You can change the level of backlight and contrast for the screen.

- **[LIGHT] for 1 second: backlight increases. At the next pressing and holding down, it will decreases**
- **[CONTR] First pressure of the key increases the value till you keep it pressed, next pressure of the key decreases the value till you keep it pressed**

MAP 11csE Plus GPS:

- **[POWER] + use cursor to adjust backlight levels and/or contrast levels of the screen and to adjust illuminations of the Easy Link instruments**

Now you return to the chart screen with the new backlight and contrast levels retained.

2.3 SELECTING THE USER INTERFACE LANGUAGE

It is possible to set the language to display menus, data pages, warning/alarm messages, full/quick info, list of objects found by find/nearest function, and on charts (such as place's names, buoy's names and so on).
To select the language you want:

- **[MENU] + [MENU] + "CONFIGURATIONS" + [ENTER] + "LANGUAGE" + [ENTER] + select the language you want + [ENTER]**

NOTE *If the selected language is not available on cartographic data, English language is used instead.*

WARNING

If you have accidentaly selected an incomprehensible language, and you

*don't be able to reselect your language (the above procedure is not of help to you), follow this procedure: press **[MENU]** two times, move the cursor to highlight the first item (starting from the top) which corresponds to the Configurations menu and press **[ENTER]**. Then a window appears with "Language" message, press **[ENTER];** now select your language and press **[ENTER]** again. Anyway if you in trouble, see Chapter 6 "Maintenance" for a RAM Clear operation: the chart plotter will also return all selections, in particular language, to original default values.*

2.4 SELECTING THE CHART LANGUAGE[E]

➤ **[MENU] + [MENU] + "CONFIGURATIONS" + [ENTER] + "CHART LANGUAGE" + [ENTER] + select the language you want + [ENTER]**

The possible choices are listed in the table below:

Language:	Allows setting the language to display chart information. The language is chosen among the list of languages available on the cartographic data (C-CARD or embedded charts).	
Mode:	Defines how objects are translated. It is possible to choose between the three following options:	
	Off	Uses the same Language used for LANGUAGE. If the selected language is not present on the objects information, English is used instead;
	English	Always uses English;
	Local	Uses the first Local language present on data. If no Local language is available, English is used instead.

NOTE *a. When User Interface Language is changed, Chart Language settings are set as follows: MODE is set to Off and Chart Language is set as the User Interface Language selection if available on the chart data, otherwise is set to English.*
b. If the cartographic data is changed (for example the C-CARD is removed or replaced), Chart Language settings should be verified and if necessary changed.

2.5 USING C-MAP BY JEPPESEN DATA C-CARD

The chart plotter has a built-in world map. To use the chart plotter as a navigation aid, data C-CARD with detailed information for the area you wish to navigate are required. See the technical details of your chart plotter for inserting/removing data C-CARD procedure.

NOTE *During normal operations the data C-CARD should not be removed since the chart plotter may lock up.*

2.6 SIMULATION MODE

The built-in Simulator function allows you to become proficient in the use of the chart plotter. It simulates the reception of the navigation data (Lat/Lon, Course, Speed, Date, Time). The simulated ship's position is placed at the current cursor position by the time the simulation is activated. To start the Simulator:

➤ **Place the cursor at your desired position + [MENU] + [MENU] + "ADVANCED SETTINGS" + [ENTER] + "SIMULATION" + [ENTER] + "ACTIVATE SIMULATION" + [ENTER] + "ON" + [ENTER]**

You might insert the Speed, Heading, Date and Time values:

➤ **[MENU] + [MENU] + "ADVANCED SETTINGS" + [ENTER] + "SIMULATION" + [ENTER] + "SPEED"/"HEADING"/"DATE"/"TIME" + [ENTER] + enter values + [ENTER]**

Also in Chart page you might use the cursor up/down to adjust the Speed and the cursor left/right to adjust the Course. To enable this Cursor Control[E] function follow this procedure:

➤ **[MENU] + [MENU] + "ADVANCED SETTINGS" + [ENTER] + "SIMULATION" + [ENTER] + "CURSOR CONTROL" + [ENTER] + "ON" + [ENTER]**

2.7 CONTROLLING THE DISPLAY

This paragraph describes how to change the Display Mode and how to move around the chart by changing the chart scale.

Changing Display Mode

➤ **[MODE] more times**

The selected page appears on the screen. The available pages are listed in the following pictures.

NOTE *If the Fish Finder or Radar is connected, other displaying pages are available too. See the Fish Finder or Radar User Manual for more information (ONLY FOR MAP 7CWI PLUS see the Capther 7 for Fish Finder information).*

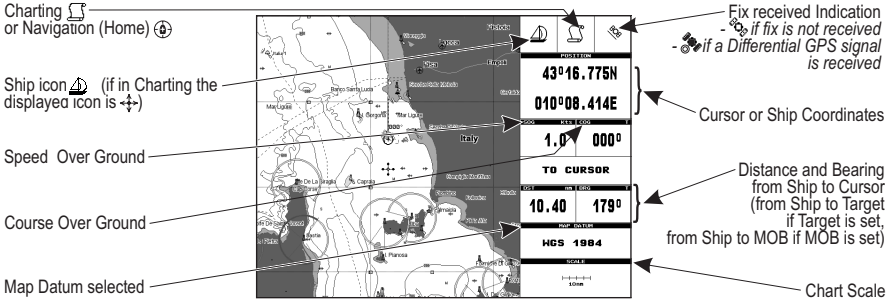

Charting or Navigation (Home)
Ship icon (if in Charting the displayed icon is)
Speed Over Ground
Course Over Ground
Map Datum selected
Fix received Indication
- if fix is not received
- if a Differential GPS signal is received
Cursor or Ship Coordinates
Distance and Bearing from Ship to Cursor (from Ship to Target if Target is set, from Ship to MOB if MOB is set)
Chart Scale
43°16.775N
010°08.414E
1.0
000°
TO CURSOR
10.40
179°
WGS 1984

Fig. 2.7 - Example of charts and Text Area on right side

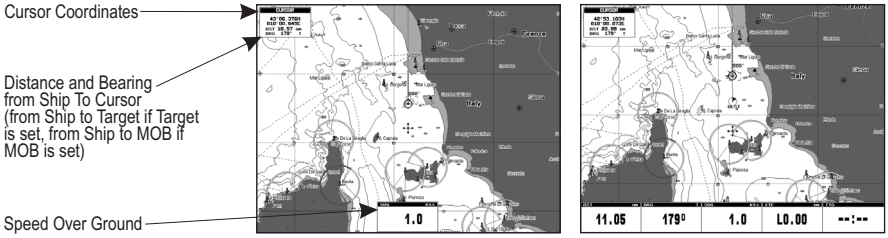


Fig. 2.7a - Example of charts and bottom Text Area pages

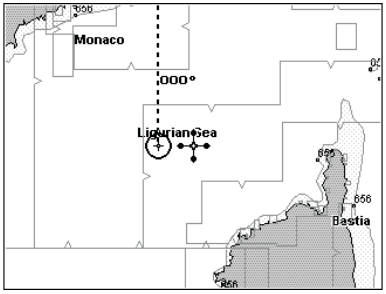


Fig. 2.7b - Example of Full Charts

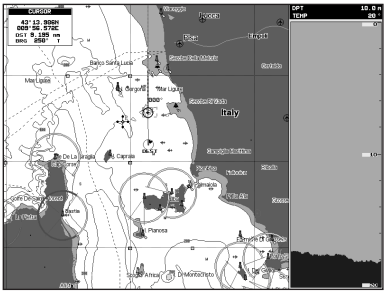


Fig. 2.7c - Example of charts with Depth graph

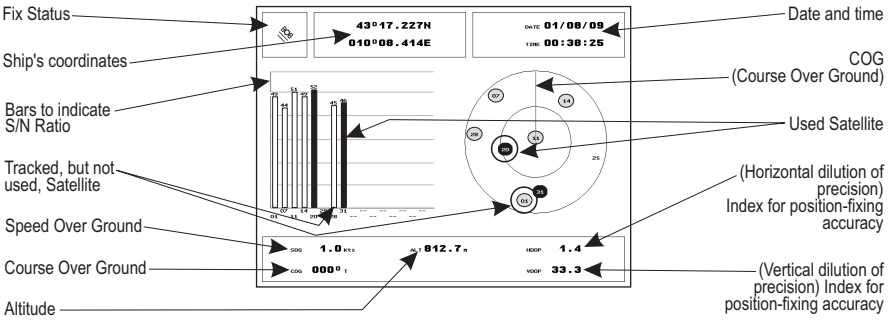


Fig. 2.6d - Example of GPS page

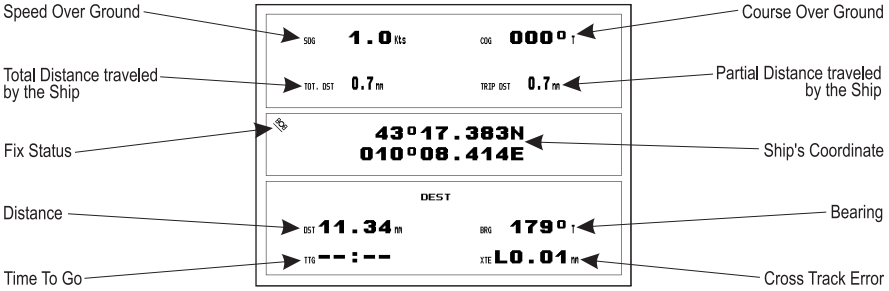


Fig. 2.7e - Example of Navigation Data

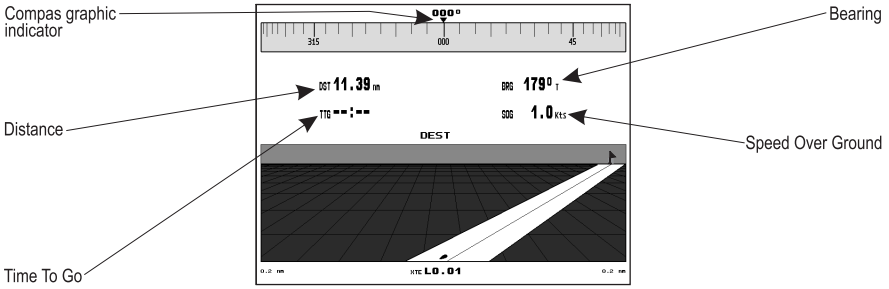


Fig. 2.7f - Example of 3D Navigation Data, if Target is set

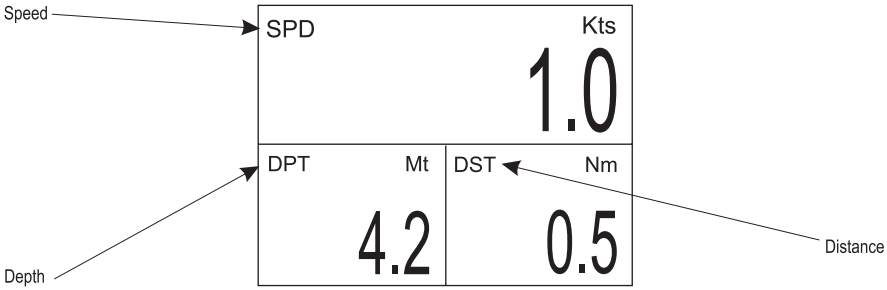


Fig. 2.7g - Example of External NMEA Data, if Speed, Depth and Distance data are set On (see par. 4.7 INPUT/OUTPUT - External NMEA)

If you have selected a Video Input (see Par. 4.7), in the Chart page a window with the picture captured from the video signal source is shown.

MAP 11csE Plus GPS:
Other pages are available, Chart with Engine Data and Engine Data pages, shown in the following pictures.

Chart with Engine Data

The engine data are shown on the right beside the chart:

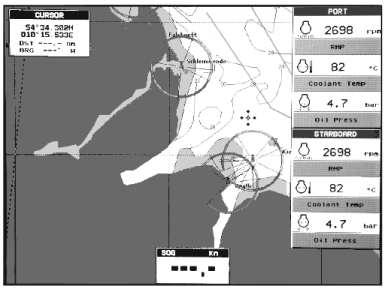


Fig. 2.7h - Example of Chart with Twin Engine Data

Engine Data page

Engine Data will be displayed according to the setting of the chart plotter, i.e.:

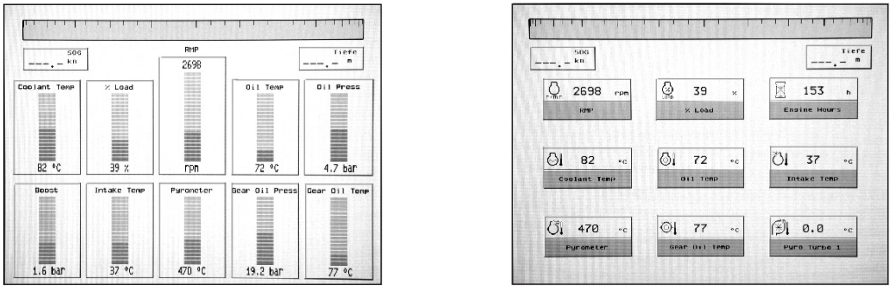


Fig. 2.7i - Example of Single Engine in Graph mode (left) and Digital mode (right)

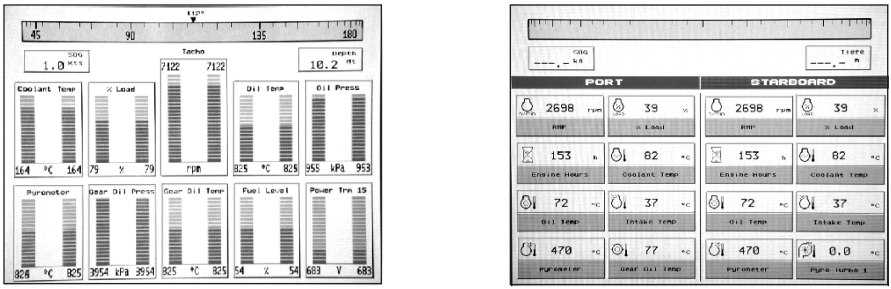


Fig. 2.7l - Example of Twin Engine in Graph mode (left) and Digital mode (right)

Moving around the Chart and Changing Chart Scale

Use the cursor key to move around the chart. Also use **[ZOOM IN]** and **[ZOOM OUT]** to change the chart scale so that a smaller or larger area is shown on the chart.

Finding Your Boat Position

The most common use of the chart plotter is to show your ship's current location. You can home the cursor to the ship using **[CLEAR]**. The Home function locks the cursor to the ship and updates the display as the ship moves.
To release the cursor from the Home Mode, use the cursor key to move the cursor away from the ship's current position.

Selecting Screen Amplifier[E]

In Home mode the Screen Amplifier[E] function sets up the charts on the navigation direction (course) in order to display more map details in front of the vessel's position.

➤ **[MENU] + [MENU] + "CONFIGURATIONS" + [ENTER] + "SCREEN AMPLIFIER" + [ENTER] + "ON" + [ENTER]**

Selecting Map Orientation[E]

To select the orientation of your chart according to:

➤ **[MENU] + "MAP ORIENTATION" + [ENTER]**

The Map Orientation[E] function selects the orientation of your chart according to: North (the map is shown with North upwards), Head (the map is shown with the ship's current heading upwards), Course (the map is shown with the currently selected course leg upwards).
If Course or Head has been selected, is possible to insert the Map Orientation Resolution[E] angle.

➤ **[MENU] + [MENU] + "ADVANCED SETTINGS" + [ENTER] + "NAVIGATE" + [ENTER] + "MAP ORIENTATION RES" + [ENTER] + use cursor to insert values + [ENTER]**

The Resolution angle, which may be selected in the range [5 – 60] degrees, defines the maximum variation of the reference angle after which the map changes its orientation.

2.8 NAVIGATION TO A SINGLE DESTINATION

To place the destination at cursor coordinates and activates navigation to it:

➤ **Place the cursor on location to navigate to + [ENTER] + "GOTO" + [ENTER]**

You are now navigating to the destination drawn as a Mark with a circle around it,

labelled "DEST". A straight line is shown on the screen connecting the destination with the ship's position. All navigation data is referred to this destination.

2.9 EBL/VRM FUNCTION

Selects the EBL (Electronic Bearing Line) and VRM (Variable Range Marker) function: the EBL is a line with its origin on the cursor or ship's position, while the VRM is a circle with its radius is determined by the user.

Inserting EBL/VRM

- **Place cursor on the preferred point + [ENTER] + "EBL/VRM" + [ENTER] + move the cursor + [ENTER]**

A line with its origin on the cursor position (or ship) and a circle appears. Press **[ENTER]** to confirm. A window with the EBL and VRM values appears.

Deleting EBL/VRM

- **Place on the cross between EBL and VRM + [ENTER] + "DELETE" + [ENTER]**

The line and the circle disappears from the screen.

Editing EBL/VRM

- **Place on the cross between EBL and VRM + [ENTER] + "EDIT" + [ENTER] + moving the cursor to modify the line direction and the circle radius + [ENTER]**

2.10 MAN OVERBOARD (MOB)

If a person or object is lost overboard and you need to return to the location, use the MOB (Man OverBoard) function.
To activate the MOB function, a valid GPS fix must be available.

Inserting MOB

- **[ENTER] + "MOB" + [ENTER]**

the message "MOB Activate" is shown for a few second, then disappears pressing **[ENTER]** or **[CLEAR]**. Data displayed in Text Area are related to MOB.
Once inserted, the system performs the following operations:

1. places the MOB icon at ship's position
2. stops navigation to an existing destination (if present)
3. sets the MOB as destination

Deleting MOB

- **Place cursor on existing MOB + [ENTER] + "DELETE" + [ENTER]**

3. Operations

3.1 USER POINTS: MARKS AND WAYPOINTS

A User Point is an object that you can place on the charts to mark a specific point. The chart plotter features two types of User Points: Marks and Waypoints. A Waypoint is created entering a Route, while a Mark can be created at anytime at your cursor position.

Creating Waypoint

See Creating a Route.

Creating Mark

- **[ENTER] + "MARK" + [ENTER]**

The new Mark appears on your cursor position. Note that if in Home Mode, the Mark is created at your vessel position.

Selecting the User Points List page

To give information and allow the editing of all stored User Points:

- **[MENU] + [MENU] + "USER POINTS LIST" + [ENTER]**

NOTE *It is not possible to edit/remove/move a Waypoint if it belongs to the active Route.*

Editing User Point

To allow to modify symbol, name, color and position* of the User Point.

- **In Chart page, place the cursor on the desired User Point + [ENTER] + "EDIT" + [ENTER] + use the cursor key to modify Symbol/Name/Color/Lat-Lon + [CLEAR]**

The User Point appears on the selected position with the new symbol and color.

NOTE *To select the User Point presentation:*

- **[MENU] + [MENU] + "CONFIGURATIONS" + [ENTER] + "USER POINTS" + [ENTER]**

  There are three possible choices: by selecting "OFF" the User Point is not shown on the screen, otherwise by selecting "ON" it is shown on the Chart page shown with symbol and name; by selecting "ICON" only the User Point symbol is shown.

Deleting User Point

- **In Chart page, place the cursor on the desired User Point + [ENTER] + "DELETE" + [ENTER]**
- **Enter the User Points List page + use the cursor to select the row with the desired User Point + "CLR-ONE" + [ENTER] + "YES" + [ENTER]**

The User Point is deleted.

It is also possible to delete all stored User Points:

- **Enter the User Points List page + "CLR-ALL" + [ENTER] + "YES" + [ENTER]**

NOTE *It is also possible to delete all User Points with a same symbol (CLR-SYM) and all User Points of a same type (CLR-TYP).*

Moving User Point

- **Place the cursor on the desired User Point + [ENTER] + "MOVE" + [ENTER] + move the cursor to the desired position + [ENTER]**

The User Point is placed on the screen at the new position.

Locating User Point on Map

- **Enter the User Points List page + use the cursor to select the row with the desired User Point + "FIND" + [ENTER]**

The User Points List is closed and the map is centered on the selected User Point.

Sending/Receiving User Points

To send all stored User Points to an external device capable of listening to NMEA WPL sentence.

- **Enter the User Points List page + "SEND" + [ENTER]**

To receive User Points from an external device capable of sending NMEA WPL sentence.

- **Enter the User Points List page + "RECEIVE" + [ENTER]**

3.2 ROUTES

A Route is made by placing a series of Waypoints. Among the available Routes only one can be the Active Route, that is shown on the screen by straight lines and arrows to indicate the direction; the first Waypoint of this Route is surrounded by a circle. The Active Route (sometimes called current) is the working Route: it can be edited by adding, removing or moving Waypoints.

Selecting Active Route

- **[MENU] + [MENU] + "ROUTE" + [ENTER] + "CURRENT" + [ENTER] + use the cursor key to select the Route number + [ENTER]**

The Route, shown by straight segments, is centered on the screen, with the cursor on the central Waypoint. This will then allow you to quickly work out which Route you have selected. When you want to create a new Route, select an open Route position in the list using the above procedure.

Creating a Route

To create a new Route:

- **Place the cursor + [ENTER] + "WAYPOINT" + [ENTER]**

This places the first Waypoint of the new Route on your cursor position. To place the next Waypoints of the Route repeat the above procedure.

The following functions work on the Active Route.

Inserting Route name

To insert a name on the selected Route:

- **[MENU] + [MENU] + "ROUTE" + [ENTER] + "NAME" + [ENTER] + use the cursor key to insert the name + [ENTER]**

Selecting Route Color

To select Route legs color among the available colors:

- **[MENU] + [MENU] + "ROUTE" + [ENTER] + "COLOR" + use the cursor key to select color + [ENTER]**

The Route is drawn on the screen in the selected color. It is possible to select a different color for any Route.

Deleting Route

- **[MENU] + [MENU] + "ROUTE" + [ENTER] + "CLEAR" + [ENTER] + "YES" + [ENTER]**

The Route legs and Waypoints are deleted. If the destination is placed on the Route, that Route cannot be deleted.

It is also possible to delete all stored Routes and Waypoints:

➤ **[MENU] + [MENU] + "ROUTE" + [ENTER] + "CLEAR ALL" + [ENTER] + "YES" + [ENTER]**

Following a Route (Activate the Navigation)

With the Route shown on the Chart page, move the cursor to the Waypoint in the Route and press **[ENTER]**, select "GOTO" and press **[ENTER]** again. The destination is placed on the Waypoint of the selected Route and you are now navigating to it.

Inserting Waypoint

To insert a new Waypoint between two existing ones, if a destination is not placed on the Route:

➤ **Place the cursor on the desired Route leg + [ENTER] + "INSERT" + [ENTER] + move the cursor to the new position + [ENTER]**

The new Waypoint is placed.

To add a new Waypoint to the last Waypoint of the Route:

➤ **Place the cursor + [ENTER] + "WAYPOINT" + [ENTER]**

Reversing Route

To allow a return Route to be generated from an existing Route.

➤ **[MENU] + [MENU] + "ROUTE" + [ENTER] + "INVERT" + [ENTER]**

The Route is then followed in reverse order, with Waypoints renumbered accordingly. If the destination is placed on the Route, that Route cannot be reversed.

Selecting Route Report page

To give information on Waypoints belonging to the selected Route:

➤ **[MENU] + [MENU] + "ROUTE" + [ENTER] + "REPORT" + [ENTER]**

In this page it is possible to modify the Speed and Fuel consumption values:

➤ **[MENU] + [MENU] + "ROUTE" + [ENTER] + "REPORT" + [ENTER] + "SPEED"/ "FUEL" + [ENTER] + use the cursor to insert values + [ENTER]**

Sending/Receiving Route[E]

To send the active Route to a external device capable of listening to NMEA RTE and WPL sentences.

➤ **[MENU] + [MENU] + "ROUTE" + [ENTER] + "SEND" + [ENTER]**

To receive Route from an external device capable of sending NMEA RTE and WPL sentences. The Route is stored in the location of currently selected Route.

➤ **[MENU] + [MENU] + "ROUTE" + [ENTER] + "RECEIVE" + [ENTER]**

Safe Route Checking

This function checks the presence of particular cartographic objects (see the list below) on a range set by the user for all Route legs:

- Land Areas
- Shallow Water
- Intertidial Areas
- Rocks
- Wrecks
- Obstructions
- Shoreline Constructions
- Fishing Facility
- Dredged Areas
- Diffusers
- Mooring/Warping Facility

- Production Installation
- Pingos
- No Data Available

If any of these alarm conditions is detected, the function returns the list of dangerous objects and the relative dangerous Route leg, that is drawn with a different color.

To activate this function:

➤ **[MENU] + [MENU] + "ROUTE" + [ENTER] + "AUTOMATIC CHECK" + [ENTER] + "ON" + 'ENTER'**

NOTE *If Automatic Route Check is enabled, anytime you append or insert a new Waypoint, delete, move or edit any Waypoint, the Route is checked. Only the modified Route legs are checked.*

To select the width of the detected area aside the Route:

➤ **[MENU] + [MENU] + "ROUTE" + [ENTER] + "ROUTE WIDTH" + [ENTER]**

NOTE *Safe Route width value represents half the total width checked by the function.*

To select the depth of the detected area aside the Route:

➤ **[MENU] + [MENU] + "ROUTE" + [ENTER] + "DEPTH LIMIT" + [ENTER]**

It also possible to select the accuracy for the Route check, among Minimum, Low, Medium, High and Maximum:

➤ **[MENU] + [MENU] + "ROUTE" + [ENTER] + "ACCURACY" + [ENTER]**

The list of the dangerous objects found on the charts crossed by the Route is shown in the Route check report, follow the procedure:

➤ **[MENU] + [MENU] + "ROUTE" + [ENTER] + "ROUTE CHECK REPORT" + [ENTER]**

3.3 GOTO FUNCTION

This functions allows you to place the destination point and immediately start navigating to it.

Navigation to Waypoint

➤ **Place the cursor on the desired Waypoint + [ENTER] + "GOTO" + [ENTER]**

A circle surrounds the Waypoint symbol. A dotted line is shown, connecting the destination with the ship's position. When the destination is placed, all navigation data are referred to it.

Deleting destination

If the destination has been placed, to stop the navigation to the Waypoint:

➤ **Place the cursor on destination icon + [ENTER] + "STOP NAV" + [ENTER]**

NOTE *If you select "NEXT"/"PREVIOUS" the destination icon is moved on the next/ previous Waypoint in the Route.*

Otherwise when the cursor is placed on a generic position on the chart:

➤ **[ENTER] + "GOTO" + [ENTER] + "STOP NAV" + [ENTER]**

NOTE *If you select "START", the destination icon is moved on the new cursor position.*

The symbol that identifies the destination disappears from the screen, but the Waypoint remains.

3.4 USING TRACK

A very useful feature of the chart plotter, is the ability to store and display exactly where the boat has been. This feature, referred to as Tracking, can provide invaluable information about the effect of tide and wind influence on the boat's progress as well as giving an indication of the helmsman's performance.
When this limit has been reached, the oldest points are deleted and overwritten by the newest ones.

Setting up a Track Step

Before you use the Track function, it is important to specify the Track step unit: if you select Distance, the Track point is placed when the distance from its last stored position is greater than the defined distance; if Time, the Track point is placed after the defined time; if Auto, the software decides when storing a position, on the basis of the straight or curved track.

- **[MENU] + [MENU] + "TRACK" + [ENTER] + "STEP UNIT" + [ENTER] + "DIST"/ "TIME"/"AUTO" + [ENTER]**

You can select the Track step Time [1, 5, 10, 30 sec; 1, 5, 10 min] or distance [0.01, 0.05, 0.1, 0.5, 1.0, 2.0, 5.0, 10.0] Nm. Setting a short time/distance interval between Track points is best suited to navigate within a close or complex environment, a greater time/distance interval is best suited to a long voyage.
To select the interval at which the Track points are placed:
if you have selected Distance:

- **[MENU] + [MENU] + "TRACK" + [ENTER] + "DISTANCE" + [ENTER] + choice the desired step + [ENTER]**

if you have selected Time:

- **[MENU] + [MENU] + "TRACK" + [ENTER] + "TIME" + [ENTER] + choice the desired step + [ENTER]**

Selecting Track Color

To select among different line colors that you choose for the Track:

- **[MENU] + [MENU] + "TRACK" + [ENTER] + "COLOR" + [ENTER]**

The same Track can be saved with any color.

Displaying Track

To enable or disable the Track displaying on the map screen:

- **[MENU] + [MENU] + "TRACK" + [ENTER] + "VISIBLE" + [ENTER] + "ON"/ "OFF" + [ENTER]**

Activating/Deactivating Track Recording

To activate or deactivate the Tracking of the vessel while the vessel is moving:

- **[MENU] + [MENU] + "TRACK" + [ENTER] + "TRACKING" + [ENTER] + "ON"/ "OFF" + [ENTER]**

Clearing Track

All the Track or part of it can be cleared from the screen:

- **[MENU] + [MENU] + "TRACK" + [ENTER] + "DELETE" + [ENTER] + "YES" + [ENTER]**

Selecting Track Number

The chart plotter has the capability to store up to 2 Tracks. To select a Track:

- **[MENU] + [MENU] + "TRACK" + [ENTER] + "ACTIVE TRK" + [ENTER] + use the cursor key to select the number + [ENTER]**

3.5 INFO

Placing the cursor on cartographic objects the information related to the object nearby is shown.

Setting Automatic Info^{E}

Automatic Info^{E} allows you to get the information on any cartographic object just by placing the cursor on it.
You can select the type of it:

➤ **[MENU] + [MENU] + "ADVANCED SETTINGS" + [ENTER] + "SETUP" + [ENTER] + "Auto Info" + [ENTER]**

The possible settings are **Off** (no automatic info shown at all), **On Points** (only on points e.g. Rocks, Buoys, Lights, Tide Stations) and **On All** (on all objects, points, lines and areas).

NOTE *Choosing "On All" the Automatic Info^{E} will be shown most of the times the cursor is moved.*

Selecting Automatic Info

➤ **Move the cursor on the object**

The pop-up window with the basic info of the objects is displayed. To get full details of the object press **[ENTER]**.

Displaying Expanded Info page (Full Info)

To show the Expanded Info page:

➤ **Place the cursor on objects + [MENU] + "INFO" + [ENTER]**

Info Tree and Expanded Info page

The page combines the Info Tree and the Expanded Info pages; this gives the advantage of showing the details of the object selected on the Info Tree while the cursor is moving through the Info Tree's items. The upper side of the page contains the Info Tree and the Lower side contains the expanded information. While moving the cursor through the Info Tree, all the relevant information of the selected object is shown on the lower part of the page. When the selected object is a Tide Height, pressing **[ENTER]** the Tide page is shown. Pressing **[CLEAR]** the page is closed. If the information shown exceeds the page size, the user may scroll the page.

Info on objects with Pictures

To get the information on objects with pictures.

➤ **Move the cursor on the object**

On the Quick Info, there will be the camera icon on the top bar of the window if at least one of the objects found has one or more pictures associated.

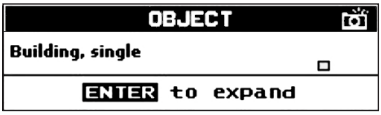


Fig. 3.5 - Example of Quick Info on objects with picture

On the Full Info, there will be the small camera icon on a corner of the square containing the object icon or a big photo icon centered on the square for the object without icon.

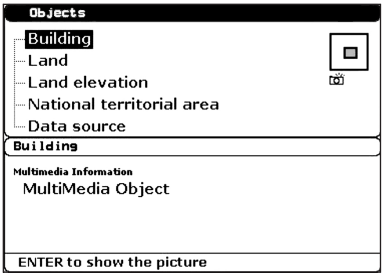


Fig. 3.5a - Example of Full Info on objects with picture

To see pictures:

➤ **Press [MENU] when the object with a picture is highlighted**

To change size:

➤ **Press [ENTER] when the picture is shown.**

Quick Info on Lakes

Upon viewing the chart of a lake, you will click on to query the available information immediately displayed with many details.
For example, see the following picture:

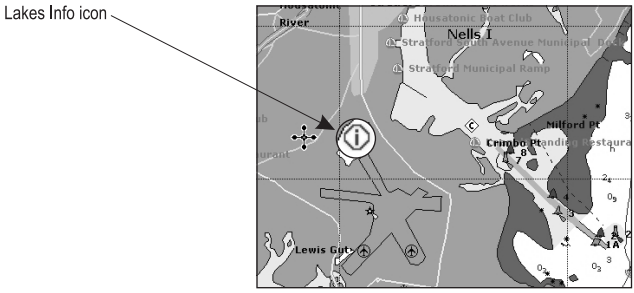


Fig. 3.5b - Example of Lakes info

When the cursor is placed over the icon, the icons of the available services are shown:

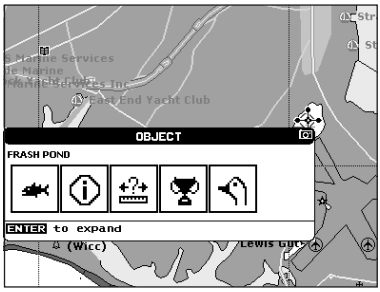


Fig. 3.5c - Quick Info: available services

If you press **[ENTER]** all available information about the cartographic point under

the cursor will be shown. See the next paragraph.

Full Info on Lakes

The following is an example of Full Info on Lakes:

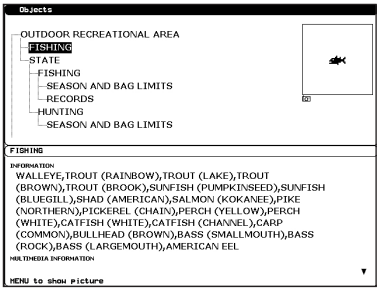


Fig. 3.5d - Example of Full Info page

To see the "Fishing" object press **[MENU]** (when the "Fishing" object is highlighted). On the screen appears:

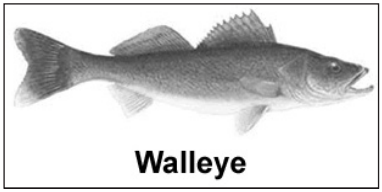


Fig. 3.5e - Example of picture associated to the Fishing object

3.6 PORT & TIDE INFO

Getting Port Info

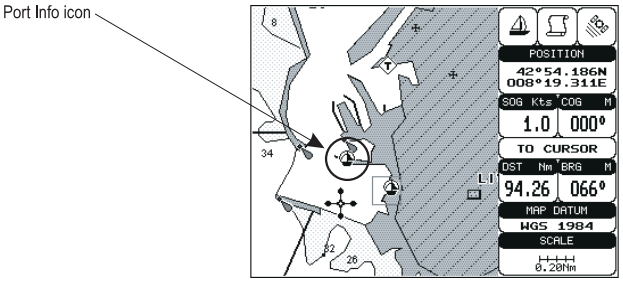


Fig.3.6 - Port Info icon

The object Port Marina contains the information about the services available on the selected Port Marina and the area around it. To get info on Port Marinas, move the cursor on the Port Info icon. The available information is shown in the Automatic Info window where icons of the available services are shown:

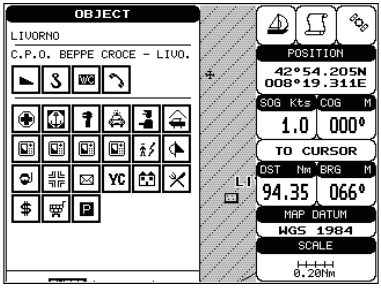


Fig.3.6a - Automatic Info window on Port

To expand information about that object press **[ENTER]**.

NOTE *Port Info icon is visible only if the Ports + Services option is On*

Getting Tide Info

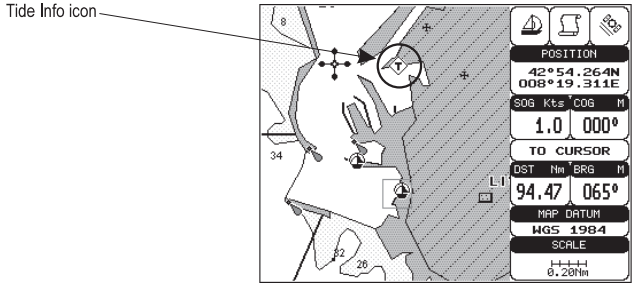


Fig. 3.6b - Tide Info icon

By placing the cursor over the Tide Station icon, the chart plotter pops-up the relative automatic info window (see picture below) and allows displaying a graphical page with the tides prediction of the selected object.

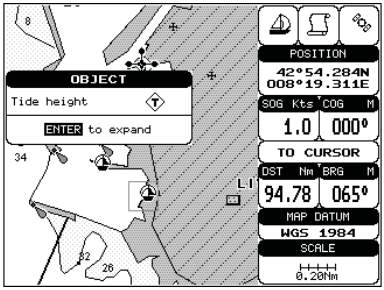


Fig. 3.6c - Automatic Info window on Tide

Use **[ENTER]** to display the Tide Graph page. It shows the Tide height variations during the 24 hours at any given day.

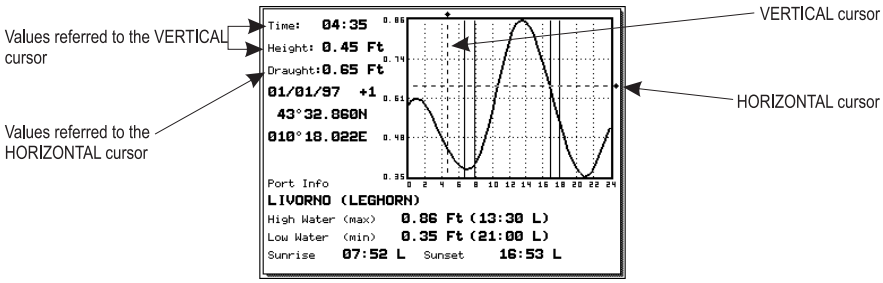


Fig. 3.db - Tide Graph page

This screen shows that day's Tide Height graph for the area where the Tidal symbol was located. Using **[ZOOM IN]** and **[ZOOM OUT]** it is possible to display future or past tides. If you wish to quickly display the tide for a specific date, press **[ENTER]** and enter the required date using the cursor key followed by **[ENTER]** once the date is set. To simplify reading the graph, the chart plotter displays a moveable Vertical and Horizontal slider which can be moved using the cursor key. Using the up/down cursor key, move the horizontal slider to correspond with the draft of your boat. Using the Vertical slider you can then read the times at which the graph dips below the horizontal line i.e. the times when you will be in danger of grounding.

NOTE *Tide graph is an approximation of the tide and they should be used in conjunction with traditional tide tables and navigational methods. The Tide height value represents the variation relative to the "Mean Lower Water" value.*

3.7 FIND FUNCTION

The Find function allows searching for the nearest Port, Port Services, Tide Stations, Wrecks, Obstructions, Points Of Interest and Lakes loaded on the C-CARD. When the Find function is executed a list of available objects to search is shown. Also the Find function allows to center the screen over a selected User Point, on the Cursor position or at desired Coordinates.

NOTE *Activating the Find function a Warning message is shown if there is no C-CARD inserted.*

Finding Nearest Services

To show the nearest Port Services of a particular type (i.e. the nearest Hospital, sailmaker, bank, etc.).

➤ **[MENU] + "FIND" + [ENTER] + "NEAREST SERVICES" + [ENTER]**

The icons list of the available services is shown. Use the cursor key to select any facility and press **[ENTER]**. By selecting one of the facilities the list of the nearest ports (up to 10) in which this port facility is present, will be shown.

Finding Tide Stations

To show the nearest Tide Stations to the boat position (or to the cursor position if the position fix is not received).

➤ **[MENU] + "FIND" + [ENTER] + "TIDE STATIONS" + [ENTER]**

After a few seconds a window appears. Choose the Tide Station you want and press **[ENTER]** to display the Tide Graph page. Press **[CLEAR]** to display the Tide Station chosen.

Finding Wrecks

To show the nearest Wrecks loaded in the C-CARD:

➤ **[MENU] + "FIND" + [ENTER] + "WRECKS" + [ENTER]**

Press [ENTER] to locate the selected Wreck on the map.

Finding Obstructions

To show the nearest Obstructions loaded in the C-CARD:

➤ **[MENU] + "FIND" + [ENTER] + "OBSTRUCTIONS" + [ENTER]**

Press [ENTER] to locate the selected Obstruction on the map.

Finding Port By Name

To select the Port By Name function following the procedure:

➤ **[MENU] + "FIND" + [ENTER] + "PORT BY NAME" + [ENTER]**

Shows the list of all ports stored on the C-CARD in alphabetical order and allows to search ports by name to locate the ports on the map. Press [ENTER] + [CLEAR] to locate the selected Port by Name on the map.

Finding Port By Distance

To select the Port By Distance function following the procedure:

➤ **[MENU] + "FIND" + [ENTER] + "PORT BY DISTANCE" + [ENTER]**

Shows the list of all ports stored on the C-CARD in closest distance order and allows to locate the ports on the map. Press **[ENTER] + [CLEAR]** to locate the selected Port by Distance on the map.

Finding Lakes Information

Searches for nearest Lakes Info:

➤ **[MENU] + "FIND" + [ENTER] + "LAKES INFO" + [ENTER]**

It founds the Outdoor Recreational Area objects. See the following picture:

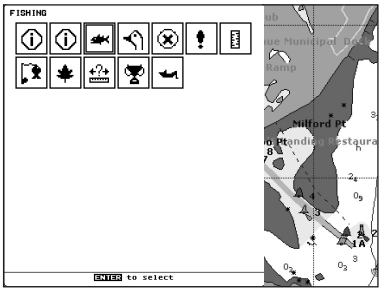


Fig. 3.7 - Outdoor Recreational Area objects

Use the cursor key to select any objects and press **[ENTER]**. The list of the nearest lakes containing the facility will be shown on the screen.

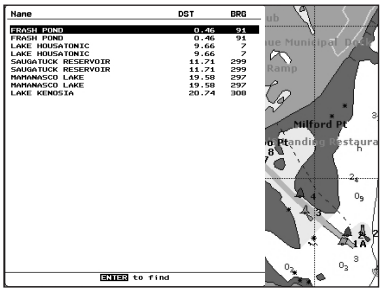


Fig. 3.7a - Nearest Lakes list

Then choose the lake you want and press [ENTER]: the Full Info page is shown.

Finding Lakes By Name

To select the lakes By Name function following the procedure:

➤ **[MENU] + "FIND" + [ENTER] + "LAKES BY NAME" + [ENTER]**

Shows the list of all lakes stored on the C-CARD in alphabetic order. Pressing **[MENU]** to insert the Lake name.

Finding Points Of Interest

Searches for nearest Points Of Interest (POI):

➤ **[MENU] + "FIND" + [ENTER] + "POINTS OF INTEREST" + [ENTER]**

A sub-menu is opened to find different categories of Points Of Interest.

Finding Coordinates

To center the map at given coordinates:

➤ **[MENU] + "FIND" + [ENTER] +"COORDINATES" + [ENTER] + use the cursor to insert coordinates + [CLEAR]**

3.8 ALARMS

The chart plotter provides alarms for various functions. You can enter the desired alarm range for each function.

Arrival Alarm

To set an acoustic alarm to sound when the vessel is approaching the destination.

➤ **[MENU] + [MENU] + "ALARMS" + [ENTER] + "ARRIVAL ALARM" + [ENTER]**

XTE Alarm

To set an acoustic alarm to sound when the vessel is deviating from a defined course.

➤ **[MENU] + [MENU] + "ALARMS" + [ENTER] + "XTE ALARM" + [ENTER]**

Anchor Alarm

To set an alarm to sound when the ship moves off the current ship's position location.

➤ **[MENU] + [MENU] + "ALARMS" + [ENTER] + "ANCHOR ALARM" + [ENTER]**

NOTE *By the time the Anchor Alarm is set the current ship's position is saved as origin position. The alarm goes off when the ship moves away from the origin position more than the entered alarm range.*

Depth Alarm

To set an acoustic alarm to sound when the received depth value (from the depth transducer) is too shallow.

➤ **[MENU] + [MENU] + "ALARMS" + [ENTER] + "DEPTH ALARM" + [ENTER]**

Audible Alarm

To enable (On) or disable (Off) the Audible Alarm.

➤ **[MENU] + [MENU] + "ALARMS" + [ENTER] + "AUDIBLE ALARM" + [ENTER]**

Grounding Alarm

To verify potential danger to navigation such shallow water (depth areas), intertidal areas, land, rocks, obstructions and shoreline constructions. The maps are scanned every 10 seconds.
If any of the above objects are found, the chart plotter notifies the danger on a dedicated warning message box. The active "Grounding Alarms" are shown in the Grounding Alarm Report page.
To activate the Grounding Alarm:

➤ **[MENU] + [MENU] + "ALARMS" + [ENTER] + "GROUNDING ALARM" + [ENTER]**

The chart plotter scans a sector in front of the boat. The direction is determined by the current boat heading. You can select the length and its angle is 30 degrees. The Grounding Alarm is switched Off by default after a Master Reset.

Grounding Alarm Range

To set the length of the sector to be detected among 0.25, 0.5, 1.0 Nm.

➤ **[MENU] + [MENU] + "ALARMS" + [ENTER] + "GROUNDING ALARM RANGE" + [ENTER]**

Grounding Alarm Report[E]

To display the report of the dangerous objects currently detected.

➤ **[MENU] + [MENU] + "ALARMS" + [ENTER] + "GROUNDING ALARM REPORT" + [ENTER]**

When any of the searched objects is found in the scanned area, a tick marker is printed on the relative box to identify which dangerous objects have been currently detected. Once the alarm condition is no longer present, the relative tick marker is removed.

NOTE *The alarm "No data" is shown when no specific cartographic data are found on the C-CARD or when no C-CARD is inserted.*

MAP 11csE Plus GPS/MAP cX Plus GPS:

External Alarm

When any alarm condition occurs the pin is switched from High Impedance to ground. This signal can be used by an external device (as a hooter or buzzer).

➤ **[MENU] + [MENU] + "ALARMS" + [ENTER] + "EXTERNAL ALARM" + [ENTER]**

3.9 USER C-CARD

The chart plotter allows to back up Marks, Routes and Tracks to a User C-CARD. You can also restore the data to internal memory at a later time. This allows virtually unlimited storage. The User C-CARD data storage is organized as a file system.

User C-CARD page

To display the content of a User C-CARD inserted into the C-CARD slot of your chart plotter:

➤ **[MENU] + [MENU] + "USER C-CARD" + [ENTER]**

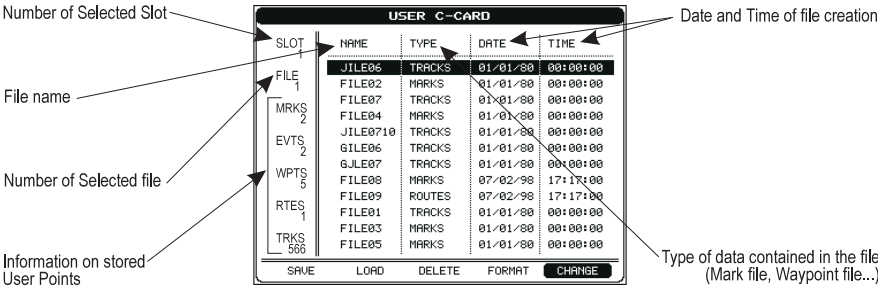


Fig.3.9 - User C-CARD Menu

Formatting User C-CARD

In order to be able to use a new User C-CARD you must format it first. This operation prepares the User C-CARD to receive and store information:

➤ **[MENU] + [MENU] + "USER C-CARD" + [ENTER] + "FORMAT" + [ENTER]**

NOTE *When a User C-CARD is formatted, all data saved on it will be deleted.*

Saving File on User C-CARD

➤ **[MENU] + [MENU] + "USER C-CARD" + [ENTER] + "SAVE" + [ENTER] + insert the file name and type + [ENTER]**

When a certain type of data (Mark, Route, Track) is saved, a new file is created on a User C-CARD. The file contains all points of the selected type currently stored in the internal memory.

- Save Marks: creates a new file containing all Marks stored in the chart plotter
- Save Route : creates a new file containing all Waypoints belonging to the selected Route (Route number is required)
- Save Track : creates a new file containing all Track points belonging to the selected Track (Track number is required)

NOTE *When naming a file, you may have trouble finding a name that uniquely identifies the file's contents. Dates, for example, are often used in file names; however, they take up several characters, leaving you with little flexibility. The secret is to find a compromise, a point where you can combine a date with a word, creating a unique file name. The maximum length of the file name is 8 characters. The characters may be numbers (0, ..., 9), letters (A, ..., Z) and spaces (for example legal identifiers are "ABC", "AA", "12121212", "A B C", "1 A 1", and so on.*

Loading File from User C-CARD

➤ **Select the file name in the list + [MENU] + [MENU] + "USER C-CARD" + [ENTER] + "LOAD" + [ENTER]**

The Load function copies the content of the selected file from User C-CARD to the internal memory of the chart plotter. If the selected file contains Marks already present in the chart plotter memory, they are non duplicated. It is required to insert the number of the Route/Track on which loading data: if the Route/Track is not empty, it is overwriten.

Deleting File from User C-CARD

To remove files.

➤ **[MENU] + [MENU] + "USER C-CARD" + [ENTER] + "DELETE" + [ENTER] + "YES" + [ENTER]**

NOTE *Remember that this option permanently erases the file.*

MAP 11csE Plus GPS/MAP cX Plus GPS:

Changing User C-CARD

Allows to select the slot in which the User C-CARD is inserted.

➤ **[MENU] + [MENU] + "USER C-CARD" + [ENTER] + "CHANGE" + [ENTER]**

4. User Setting Up

4.1 MAP MENU

To set up the map layout (available only from the chart page):

➤ **[MENU]**

Zoom Type[E]

➤ **[MENU] + "ZOOM TYPE" + [ENTER]**

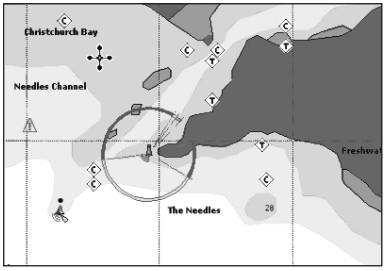
Allows larger expansion or compression of the chart scale while zooming in or out. Zoom Type has two options; Standard (default) or Flexi-Zoom. When in Flexi-Zoom mode, a short **[ZOOM...]** push causes a change of chart, whilst a long **[ZOOM...]** push (press and hold) causes a pop-up window to be displayed on a corner of the screen. The window shows the current Zoom Factor. By pressing **[ZOOM IN]**/**[ZOOM OUT]** the map is expanded or compressed according to the zoom factor selected. The Window is automatically closed if **[ZOOM...]** is not pressed for 2 seconds and the selected zoom factor will be used at the next zoom in/out.

Fonts & Symbols[E]

➤ **[MENU] + "FONTS & SYMBOLS" + [ENTER]**

It is possible to set the size of all names and symbols drawn on the charts, selecting between Normal size (the regular characters size) and Large size.

NORMAL size



LARGE size

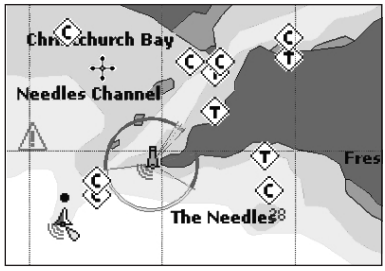


Fig. 4.1 - Example of Normal size (on the left side) and Large side (on the right side) settings

Perspective View[E]

➤ **[MENU] + "PERSPECTIVE VIEW" + [ENTER]**

Chart data may be projected in perspective mode during navigation. This function allows setting the panoramic view of the chart. As the upper side of the map is more compressed than the lower side, a wider map area is visible. The Perspective View[E] allows showing more chart information immediately ahead and around the cursor.

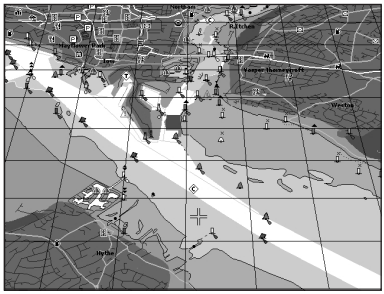


Fig. 4.1a - Perspective View

Dynamic Nav Aids

➤ **[MENU] + "DYNAMIC NAV-AIDS" + [ENTER]**

This function allows settings blinking lights on Nav-Aids. The blink period and color of each Nav-aid is read from the Nav-Aid attributes available on the data cartridge. When the ship is inside the Nav-Aid nominal range, the light of the Nav-Aid will start blinking.

When Dynamic Nav-Aids option is set to On, when the flashing light is Off, or when fix position is out of the sector, the light color is displayed by using a faint light color.

Map Orientation[E]

➤ **[MENU] + "MAP ORIENTATION" + [ENTER]**

The possible choices are listed in the table below:

North	:	The map is shown with North upwards.
Head	:	The map is shown with the ship's current heading upwards. If Head is selected, insert the Map Orientation Resolution angle in the range [5, 60] degrees.
Course	:	The map is shown with the currently selected course leg upwards. If Course is selected, insert the Map Orientation Resolution angle in the range [5, 60] degrees.

Mixing Levels[E]

➤ **[MENU] + "MIXING LEVELS" + [ENTER]**

When the map coverage at the current zoom level does not fill the entire screen, the chart plotter draws the rest of the map expanding the cartographic information read from, at most, two zoom levels above the current zoom level. For this reason the map is drawn three times: firstly it draws the two levels before the current level and then the current level. The area covered by the cartographic data read from the previous levels is identified by a dotted pattern. When the cursor is moved on an area not covered by data of the current level the chart plotter zooms out to the first level covered by cartographic data.

NOTE *The Mixing Levels[E] function works only with the new C-CARDs. It also affects the speed of the redraw of the screen. If this function is not used it may be disabled.*

Safety Status Bar[E] (DSI = DATA SAFETY INDICATOR)

➤ **[MENU] + "SAFETY STATUS BAR" + [ENTER]**

The possible choices are listed in the table below:

On	:	The Safety Status Bar[E] is shown.
Off	:	The Safety Status Bar[E] is not shown.
Icon	:	The Safety Status Bar[E] is not shown, but a Warning alarm Icon is shown on the corner of the map screen as soon as any item controlled by the DSI (**D**ata **S**afety **I**ndicator) function returns an alarm

condition. The Warning Icon remains displayed until the alarm condition persists. Placing the cursor over this Icon, a quick help message is shown next to the Icon, allowing to show the Safety Status Bar. In this case - when the Safety Status Bar^{E} is opened via Warning alarm Icon - it is allowed to obtain information about each "active" Safety Status box (the red ones): it is possible to select them by cursor movement left/right, and a list of active alarms is shown underneath the selected box. By pressing [CLEAR], the Safety Status Bar^{E} is removed from the screen.

When Safety Status Bar^{E} is On, a status bar with six boxes showing the status of certain functions is displayed. Any warning or alarm condition is identified by the red color to indicate possible risk.

Fig. 4.1b - Safety Status Bar^{E}

Boxes definition is as follows:

1 Zoom
- Normal: when the chart is displayed at normal scale.
- U. Zoom: red when the chart is under-zoomed out more than twice normal scale, gray otherwise.
- O. Zoom: red when the chart is over-zoomed in more than twice normal scale, gray otherwise.
- Chart Lock: red when the chart is zoomed in more than twice normal scale, gray otherwise.

2 Best Map
Red when a more detailed chart is available under the cursor position.

3 Data Off
Red when at least one of the following objects or layers is turned off (by the user): Depths/soundings; Wrecks/obstructions; Tracks/routes; Attention areas; Nav-Aids.

4 Declutter
Displays red when clearing overlapping objects.

5 Dangers
Red when "Guardian Technology" detects one of the following objects: Land, Intertidal, Depth Area, Rocks, Obstructions, Shoreline Constructions, Fishing Facility, Wrecks, Dragged area, Diffusion area, Mooring facilities, Pingos and Production installations.

6 Caution
Red when "Guardian Technology" detects cautionary or restricted area.

Satellite Imagery

➤ **[MENU] + "SATELLITE IMAGERY" + [ENTER]**

It is possible to overlay the Satellite image for background map. When it is set On, the Palette is set to Normal to display the proper colors.

Palette

➤ **[MENU] + "PALETTE" + [ENTER]**

It is possible to set the palette used to enhance the visibility of the screen depending on the surrounding light condition.

The possible choices are listed in the table below:

Normal	:	It is recommended when the chart plotter is not exposed to the direct sunlight. When this mode is set the maps are displayed in order to use colors as similar as possible to the ones used in the original paper charts.
NOAA	:	Allows setting NOAA paper chart colors presentation.
Sunlight	:	It is designed to enhance the visibility of the screen when the chart plotter is exposed to the sunlight. The maps are much brighter than in the other modes and the depth areas are filled with white color so different depth areas are not easily distinguishable.
Night	:	It is recommended when the environment is dark in order to reduce the glare of the display. The chart plotter displays maps and screen in darker colors.

Currents Prediction

➤ **[MENU] + "CURRENTS PREDICTION" + [ENTER]**

A window is shown on the chart. It is possible to see the variation of the Tidal arrows on the selected area at any given time. Press [ENTER] to set the date and time manually, and dedicated keys to decrease time and to increase time.

4.2 OTHER MAP CONFIGURATIONS

➤ **[MENU] + "OTHER MAP CONFIGURATIONS" + [ENTER]**

Allows the user to customize the following selections and is divided into the following setting menus: Marine Settings, Depth Settings, Land Settings, Chart Settings and Underwater Objects Settings.

Display Mode

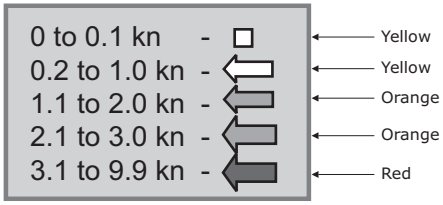
➤ **[MENU] + "OTHER MAP CONFIGURATIONS" + [ENTER] + "DISPLAY MODE" + [ENTER]**

Selects from a pre-defined table what cartographic objects are displayed and which display options are set. Pre-programmed settings are user selectable from Full, Medium, Low, Radar, Tides, Custom.
The table below shows the selections for each mode:

Setting	Full	Medium	Low	Radar	Tides	Custom (Default values)
Names	On	On	On	On	On	On
Name Tags	On	Off	Off	Off	Off	On
Nav Aids & Light Sectors	On	No Sector	No Sector	No Sector	Off	On
Attention Areas	On	On	Off	Off	Off	On
Tides & Currents	On	Off	Off	Off	On	On
Seabed Type	On	Off	Off	Off	Off	On
Ports & Services	On	On	Off	On	Off	On
Tracks & Routes	On	Off	Off	Off	Off	On
Depth Range Min	0 Mt	0 Mt	0 Mt	0 Mt	0 Mt	5 Mt
Depth Range Max	9999 Mt	9999 Mt	9999 Mt	9999 Mt	9999 Mt	20 Mt
Land Elevations	On	On	Off	Off	Off	Off
Land Elevation Values	On	Off	Off	Off	Off	On
Roads	On	Off	Off	Off	Off	Off
Points Of Interest	On	Off	Off	Off	Off	Off
Lat/Lon Grid	On	Off	Off	Off	Off	On
Chart Boundaries	On	Auto	Off	Off	Off	Auto
Value-Added Data	On	Off	Off	Off	Off	On
Chart Lock	On	On	On	On	On	On
Underwater Objects Limit	9999 Mt	10 Mt	10 Mt	10 Mt	10 Mt	3 Mt
Rocks	Icon+Depth	Icon	Icon	Icon	Icon	Icon
Obstructions	Icon+Depth	Icon	Icon	Icon	Icon	Icon
Diffusers	Icon+Depth	Icon	Icon	Icon	Icon	Icon
Wrecks	Icon+Depth	Icon	Icon	Icon	Icon	Icon

Marine Settings

To control the display on the map of the marine features.

Names	:	Sets On/Off the displaying of the Names (local area names).
Name Tags	:	Sets On/Off the displaying of a tag for particular chart objects that either includes the Name of the chart object or the Depth of an Underwater chart object. Available for Buoys, Towers, Beacons and Port Marinas.
Nav-Aids & Light Sectors	:	Sets On/Off/No Sector the graphical presentation of Lights, Signals, Buoys and Beacons. If No Sector is selected Nav-Aids are shown, Light Sectors are hidden
Attention Areas	:	Sets On/Off the displaying of Attention Areas (areas in which special attention by the mariner is required, because of natural or man-made hazards, or sailing regulations and restrictions. Moreover a special symbol (!) is placed inside the area selecting On option. This is valid also for the categories: FISHING FACILITY, MARINE FARM/CULTURE, MILITARY PRACTICE AREA, RESTRICTED AREA, SEAPLANE LANDING AREA. When the area is small, it is identified only by the boundary).
Tides & Currents	:	Sets On/Off the displaying of the Tides and Currents. When data/time is available, Tidal stream arrows are shown on the charts, indicating the direction and strength of the Tide. If no data/time is available from the GPS or the chart plotter is not in Simulation mode, the icon on the map is generic one. The color of the arrow denotes the strength of the current as follows:  When the chart plotter receives a valid position fix, the Tide icons are shown on the charts on the basis of the current date and time: the screen displays and changes arrows as date/time changes.
Seabed Type	:	Sets On/Off the displaying of the Seabed Type.
Ports & Services	:	Sets On/Off the displaying of the Ports and Services (areas along shore with facilities for mooring, downloading and uploading of ships, generally sheltered from waves and winds. Port installations are piers, wharves, pontoons, dry docks, cranes...).
Tracks & Routes	:	Sets On/Off the displaying of the Tracks and Routes (recommended and established routes for ships at sea, including traffic separation schemes, deep water routes).

Depth Settings

To control the display on the map of the depth informations.

Depth Range Min	:	Sets a minimum reference for the Depth Areas.
Depth Range Max	:	Sets a maximum reference for the Depth Areas.

Land Settings

To control the display on the map of the terrestrial features.

Land Elevations	:	Sets On/Off the Land Elevation display.
Land Elevation Values	:	Sets On/Off the displaying of the Land Elevations Values.
Roads	:	Sets On/Off the displaying of the Roads.
Points Of Interest	:	Sets On/Off the displaying of Points Of Interest.

Chart Settings

To control the display on the map of the chart features.

Lat/Lon Grid	:	Sets On/Off the displaying of the grid of parallels (of Latitude) and meridians (of Longitude) drawn on the map.
Chart Boundaries	:	Sets On/Off the displaying of the Chart Boundaries, which represents the boundaries of the charts available on the chart plotter. Selecting Auto instead, if we are in background charts only the first chart levels contained in the C-CARD are displayed, if we are in a charts level contained in the C-CARD the next four charts level are displayed.

Value Added Data	:	Sets On/Off the displaying of the Value Added Data. The Value Added Data (VAD) is a collection of additional cartographic objects which are not present on the original paper chart (from which the electronic chart derives). These objects have been obtained from other sources (that C-MAP believes to be reliable) and then merged to the electronic charts in order to provide more information useful for the navigation. VAD object can be any cartographic objects and it can be distinguished from the official-chart-objects from the Quick Info. A dedicated icon is shown on the Quick Info window to indicate that the object queried is a VAD. The same icon is also shown on the Full Info page and in addition the extended text Value Added Data is shown on the details of the VAD object.
Chart Lock (*)	:	Sets On/Off the Chart Lock option. When Chart Lock is On, the available zoom scales are only the ones containing cartographic data. Instead when Chart Lock is Off, it is possible to zoom down into zoom scales not covered by cartographic data after the last available zoom scale covered by cartographic data. The DSI window, if present, will show “NO CHART”, when an empty level is entered in the location of map expansion mode.

NOTE* *When an empty level is entered, the message “No cartographic coverage” is shown on a window in a corner of the map display. The warning message is always displayed as long as the current zoom has no data coverage.*

Underwater Objects Settings

To control the display on the Underwater Objects.

Underwater Objects Limit	:	Selects the max depth value to display Underwater Objects. If value is set to 0 Mt, the Underwater Objects are not shown on the charts. Menu options are grayed out. If value is more than 0 Mt (i.e. 10 Mt), in the Range from 0 Mt to the selected value the Underwater Objects are displayed according to their setting below.
Rocks	:	Sets Off/Icon/Icon+Depth* the displaying of the Rocks.
Obstructions	:	Sets Off/Icon/Icon+Depth* the displaying of the Obstructions.
Diffusers	:	Sets Off/Icon/Icon+Depth* the displaying of Diffusers.
Wrecks	:	Sets Off/Icon/Icon+Depth* the displaying of Wrecks.

NOTE* *Choose the options: "OFF" (the object is not visible independently of the selected “Underwater Object Depth Value”); "ICON" (the object icon is visible without tags, in the range selected from “Underwater Object Depth Value” option); "ICON+DEPTH" (the object icon and tag is visible, in the range selected from “Underwater Object Depth Value” option).*

4.3 CONFIGURATIONS

To set the general settings:

➤ **[MENU] + [MENU] + "CONFIGURATIONS" + [ENTER]**

Language	:	Selects the language for screen labels, menus and options; the map information remain on the language as in the official paper charts.
Chart Language	:	Selects a sub-menu with two items: **Language** to set the language to display chart information and **Mode** to define how objects are translated.
Speed	:	Selects the unit for Speed among Kts, Mph, Kph.
Distance[E]	:	Selects the unit for Distance among nm, Sm, Km.
Depth	:	Selects the unit for Depth among Ft, FM and M.
Altitude[E]	:	Selects the unit for Altitude of GPS Antenna on the medium sea level. The available choices are Ft, FL and m.
Wind Speed	:	Selects the unit for Wind. The available choices are Kts, m/s, Kph, Bft, Mph.
Temperature	:	Selects the unit for Temperature. The available choices are °C and °F.
Nav-Aids Presentation[E]	:	Allows to set the Nav Aids presentation as US (Draw Nav-Aids using NOAA symbology) or INTERNATIONAL (Draws Nav-Aids using international symbology). When selected it affects Lights, Signals, Buoys & Beacons display.
User Points	:	Sets On (icon + label), Off or Icon (only icon) the displaying of User Point.
Course Vector[E]	:	Selects the value among Off/2/10/30 Min/1/2 hours/Infinite. The Course Line is a graphical indication of the direction in which the Vessel is heading. The Course Line origin is the vessel’s position so the time line movement is synchronized with the vessels Icon. Course Line "course" is given by the value of COG (Course Over Ground) and its length is proportional to the SOG (Speed Over Ground).

Screen Amplifier[E]	:	Allows, when it is On and Home mode is set, to place map on the screen related to the fix position and direction, so the map shown is that before the ship.
Depth Window[E]	:	Turns On/Off the displaying of the Depth Window on the screen. When the Depth Window is set On and depth value is received from an echosounder, the depth value and unit are shown on the screen.

NOTE *If the Expert Function Distance[E] has not been activated, the Distance Unit will change according to the selected Speed Unit, see the following table:*

Speed Unit	***Distance Unit***
kts	*nm*
Mph	*Sm*
Kph	*Km*

Also if the Expert Function Altitude[E] has not been activated, the Altitude Unit will change according to the selected Depth Unit, see the following table:

Depth Unit	***Altitude Unit***
m	*m*
Ft	*Ft*
FM	*FM*

4.4 ADVANCED SETTINGS

The Advanced options are arranged in sub-menus. See Par. 2.5 on Simulation menu.

➤ **[MENU] + [MENU] + "ADVANCED SETTINGS" + [ENTER]**

Setup menu

To allow you to change how the chart plotter displays information.

➤ **[MENU] + [MENU] + "ADVANCED SETTINGS" + [ENTER] + "SETUP" + [ENTER]**

Time Reference	:	Allows switching between UTC or local time, by entering the Local Time offset.
Time Format[E]	:	Selects the format for the time between 12 and 24 hours.
Date Format[E]	:	Selects the Date Format between MM-DD-YY (month-day-year) and DD-MM-YY (day-month-year).
Beeper	:	Enables or disables the single audio beeps emitted any time the chart plotter keypad is pressed. If the incorrect key is pressed or the function required cannot be executed, the chart plotter emits three beeps.
Back Light Timeout[E]	:	Sets the time value among 1, 3, 5, 10 Min: after this time when no key is pressed, the screen and keyboard backlight is turned Off.
Auto Info[E]	:	Allows displaying information on cartographic object when the cursor is placed on it. The Automatic Info On Points shows information when the cursor is placed on points (as Port Services, Tides, lights, wrecks, rocks, buoys, beacons, obstructions, land markers, etc.). The Automatic Info On All shows information when the cursor is placed on points, on lines (as Depth contours, Traffic Separation, Territorial Sea, Cartographic Lines etc.) on areas (Depth, Built-up, Sea, Attention, Restricted etc.) and on names (on the beginning of the text -hot spot- or on any of the characters of the name -name message box-). The details on Land, Source of Data, Cartographic Area and Spot Soundings are not shown.
Keel Offset[E]	:	Adjusts the Depth Sensor Offset to display Depth under Keel. Selectable in the Range of 0.0 to 9.9m.
LOG Calibration[E]	:	Adjusts the Log Sensor to display Speed through the Water. Selectable in the Range of 0.1 to 9.9 %.

Navigate Menu

To handle the functions related to navigation.

➤ **[MENU] + [MENU] + "ADVANCED SETTINGS" + [ENTER] + "NAVIGATE" + [ENTER]**

Coordinates System	:	The possible choices are ddd mm ss (degrees, minutes and seconds), ddd mm.mm (degrees, minutes and hundred of minutes), ddd mm.mmm (degrees, minutes and thousands of minutes).
Fix Datum[E]	:	Sets the datum reference used by the GPS receiver connected to (or integrated in) the chart plotter so that the chart plotter converts the position received from the GPS to the Map

		Datum currently selected in the menu in order to match the position from the GPS with the position on the charts. You must know what datum reference is used by the GPS and set it in the Fix Datum option.
Map Datum[E]	:	Allows selecting any Geodetic Datum reference from the over 100 available on the chart plotter. Map Datum selection switches to the selected reference datum applying the datum offsets stored with the charts.
Map Orientation Res.[E]	:	Sets the resolution angle for the Map Orientation[E].
Roll. Road Scale[E]	:	3D (Three-dimensional) representation of the ship's movement related to a Target, with display Cross Track Error. Set your preferred Rolling Road Scale[E] among 0.2, 0.5, 1.0, 2.0, 4.0, 10.0.
Reset Total GPS Distance	:	Resets the total distance travelled by the ship from the first activation of the chart plotter or starting from the values reset.
Reset Trip GPS Distance	:	Resets the partial distance travelled by the ship from the first activation of the chart plotter or starting from the values reset.
Fix Correction[E]	:	Turns On/Off the Correction from the positioning system. If the new Correction is calculated, but the Correction is not enabled, the ship's position is not changed.
Compute Correction[E]	:	Corrects fixes from the positioning instrument. By placing the cursor on the ship's real position and selecting this option, the error is calculated and internally memorized for appropriate correction, but not applied.
Correction Offset[E]	:	Manual correction of fix position.

Compass[E] menu

To set the reference heading information such as bearing angles (True or Magnetic), the Magnetic Variation source and to enter Compass Calibration values.

➤ **[MENU] + [MENU] + "ADVANCED SETTINGS" + [ENTER] + "COMPASS" + [ENTER]**

Bearings[E]	:	Selects either degrees magnetic or degrees true. If magnetic readings are selected the variation is computed automatically for every zone as soon as the chart is displayed.
Variation[E]	:	It is possible to calculate the Magnetic Variation in an Automatic or manual mode, by inserting the step for calculation of Magnetic Variation.
Calibration[E]	:	The variation table is used to match magnetic value readout on the chart plotter comparable with the value given by the compass of the boat. In other words, since the compass of the boat must be compensated (due to the iron masses, ...), we use the same values given by the chart plotter. This means that, for example, if the BRG to the next Waypoint readout in the chart plotter display is "X" Mag degree, if you steer the boat reading "X" Mag degree from the compass, you are driving well toward the next Waypoint.

MAP 11csE Plus GPS:

External Engine[E] menu

You can make all relevant engine settings in this menu. The functions are described in the following table.

➤ **[MENU] + [MENU] + "EXTERNAL ENGINE" + [ENTER]**

Engine Units[E]	:	As the unit of measurement for the engine data you can choose between Metric (°C and Bar) and Imperial (°F and psi).
Engine Display[E]	:	You can choose whether you wish the engine data to be displayed in Digital form or as a Bar-graph.
Twin Engine[E]	:	You can choose whether you wish the engine data to be displayed for one or for two machines. If you select “Twin – On”, data will be displayed from two machines.
Digital Engine Page[E]	:	Engine data can be presented with the chart on one screen. When you select “Digital Engine Page – On”, the engine data are presented on the chart. Three values are shown per machine. These are: speed, cooling water temperature and engine oil pressure.
Engine Page Layout[E]	:	Here is where you select which engine data are to be displayed on the Digital or Bar-graph pages. You can select a maximum of 9 values in Digital mode and 10 values in Bar-graph mode per machine. In the Twin Engine Mode different data can be selected for each machine in the digital mode. In the bar graph mode the data shown for both machines are the same. The following engine data are available for selection: Engine Speed; Percent Load; Total Engine Hours; Engine Coolant Temperature; Fuel Temperature; Engine Oil Temperature; Fuel Delivery Pressure; Fuel Rate; Boost Pressure; Intake Manifold Temperature; Exhaust Gas Temperature; Transmission Oil Pressure; Transmission Oil Tem-

		perature; Fuel Level; Turbocharger 1 Turbine Inlet Temperature; Turbocharger 2 Turbine Inlet Temperature; Electrical Potential (Voltage); Battery Potential (Voltage), Switched; Battery 2 Potential (Voltage).
Engine Alarms[E]	:	Alarms can be defined for the most important engine data. A warning is given if the set alarm value for speed, any of the measured temperatures or fuel reserve is exceeded. A warning is also triggered if a pressure measurement falls short of the set value. On-board voltage overshooting and also undershooting will trigger an alarm. The alarm is visual in the form of a pop up window and audible as an internal buzzer.
Save Engine Settings	:	The following settings can be saved on a user chart: Engine Units; Engine Display; Twin Engine; Digital Engine Page; Engine Page Layout; Engine Alarms; Easy Link Illumination.
Load Engine Settings	:	All settings relevant to the engine can be loaded from one user chart.

4.5 AIS

AIS is an Automatic Identification System. It has been introduced to improve the safety of navigation by assisting in the efficient operation of ship-to ship, ship reporting and VTS applications. The system should enable operators to obtain information from the ship automatically, requiring a minimum of involvement of ship's personnel, and should have a high level of availability. AIS transponders installed on IMO vessels use VHF frequencies to:

- Transmit details of their own vessel
- Receive details from other vessels or navigation aids within VHF range.

Information being transmitted from vessels over 300 tons that, due to recent worldwide legislation, are required to fit Class "A" AIS transponders.
Connecting to the chart plotter an AIS receiver (please contact your local dealer), vessels with AIS transponder within VHF range are displayed on screen giving the skipper or navigator a visual interpretation of the data of nearby vessels. This improves safety, and specifically for collision avoidance reasons.

AIS SYSTEM DEFINITIONS

- **Target**
  It is a vessel equipped with AIS. Information about the targets is being received by AIS Receiver and displayed on the screen.
- **CPA**
  Closest Point of Approach is the closest distance that will be achieved between your vessel and the tracked target, based on your vessel's speed and direction and the target's speed and direction.
- **CPA Limit**
  This is the distance from your vessel that a target may reach before a target is deemed a threat.
- **CPA Alarm**
  Occurs if CPA is less or equal to CPA Limit. This test is done for active targets only.
- **TCPA**
  Time to closest Point of Approach is the time remaining until the CPA will occur.
- **TCPA Limit**
  This is the time remaining before the CPA is reached.
- **TCPA Alarm**
  Occurs if TCPA is less or equal to TCPA Limit. This test is done for active targets only and if CPA value is less or equal to CPA Limit.
- **Radio Call Sign**
  International call sign assigned to vessel, often used on voice radio.

- **Name**
  Name of ship, 20 characters.
- **MMSI**
  Maritime Mobile Service Identity.
- **MMSI number**
  A unique 9 digit number that is assigned to a DSC radio station. It primarily registers the boat information in the U.S. Coast Guard's national distress database for use in emergency situations.
- **Active Target**
  Target located within the Activation Range. Active target is represented by oriented triangle with COG and Heading vectors. Rate of turn may also be displayed.
- **Dangerous Target**
  Target detected by CPA or TCPA Alarm. Dangerous target is Active Target by definition. For better visibility Dangerous Target symbol is flashing.
- **Sleeping Target**
  Target located outside the Activation Range. Sleeping target is represented by a small oriented triangle.
- **Lost Target**
  When the AIS info is not received from that vessel for 3.5 minutes. The presentation will be a flashing black triangle with a cross through.
- **Activation Range**
  Range around your boat where targets become active. AIS target become active within this range. Activation Range should be greater than CPA Limit by definition.

NOTE *A Target is removed from the screen if data is not received for 10 minutes. The maximum number of tracked Targets is 100. Depending on the scale the presentation of the Targets change to remove clutter on the screen. This information is updated every 3 seconds to 6 minutes depending on speed and rate of turn, enabling the track of the vessels in range to be plotted.*

TARGET STATUS	DESCRIPTION	SYMBOL
ACTIVE TARGET	Target located within the Activation Range.	
DANGEROUS TARGET	Target detected by CPA or TCPA Alarm. Dangerous Target is Active Target by definition.	Flashing
SLEEPING TARGET	Target located outside the Activation Range.	
LOST TARGET	Ais info is not received from that vessel for 3.5 minutes.	

Fig. 4.5 - AIS Symbols

AIS Menu

To configure the chart plotter to receive AIS data, follow the procedure:

➤ **[MENU] + [MENU] + "AIS SETUP" + [ENTER]**

Display	:	Turns ON or OFF the display of AIS targets overlay on the cartography.
Activation Range	:	Defines the range from the fix within which the AIS Target becomes active. The values allowed are from 0.1 to 20 Nm.
CPA Alarm	:	Turns ON or OFF the alarm.
CPA Limit	:	The values allowed are from 0.1 to 10 Nm.
TCPA Alarm	:	Turns ON or OFF the alarm.
TCPA Limit	:	The values allowed are from 1 to 30 min.

To set the chart plotter for receiving AIS

Make sure that the AIS receiver is properly connected to the chart plotter.
The chart plotter reads the AIS NMEA message VMD, type 1, 2, 3 and 5.
Select the used serial port and transmission speed by following the procedure:

➤ **[MENU] + [MENU] + "INPUT/OUTPUT" + [ENTER] + "Port n Input" + [ENTER] + "m" + [ENTER]**

Where:

n = 1/2/3 for **MAP 11csE Plus GPS**
n = 1/4/5 for **MAP 7cwi Plus GPS**
n = 1/2/4/5 for **MAP 7wi Plus GPS**
n = 1/2/3/4/5 for **MAP 7w Plus GPS/MAP CX Plus**
m = NMEA-0183 4800-N81-N; AIS 38400

according to the transmission speed of your AIS receiver.

Quick Info on AIS Target

By placing the cursor over a AIS target icon, the following information is displayed:

- Vessel Name
- MMSI number
- Radio Call Sign
- SOG
- COG
- CPA and TCPA values

NOTE *The selected AIS target icon is surrounded by a square frame when user places the cursor over the icon.*

4.6 SYSTEM INFORMATION

To see details about the software and cartography data installed.

➤ **[MENU] + [MENU] + "About..." + [ENTER]**

Opens the System Information page.

World Background Charts

The internal background charts can be updated to include the MAX A and B level charts which provide improved marine data, rivers, lakes, terrestrial data (major streets , highways , railways, etc...), Nav-Aids, depth areas, territorial water areas, etc... by reading them from a special data C-CARDs (contact your local dealer). All units must have the WorldWide Background upload function that is activated from the system.

Worldwide Background Update

The System Update menu is entered from the About page. To select this menu follow the procedure:

➤ **Plug the special data C-CARD + [MENU] + [MENU] + "About..." + [ENTER] + [MENU] + "Update Worldwide Cartography" + [ENTER]**

Expert Functions

It is possible to expand the functions set available on the chart plotter. There are functions which are rarely used, the Expert Functions. These are need to be activated before their use. If you want to enable some Expert Functions, follow this procedure.

➤ **[MENU] + [MENU] + "About..." + [ENTER] + [MODE] for 1 second**

(see also Chapter "About this User Manual" for more information on this menu).
The items shown in gray color are the basic functions, they are always active and visible in the chart plotter menus. The others are the Expert Functions; you could

turn from "Off" to "On" for making visible these functions in the chart plotter menus, and then for using in the chart plotter handling.

4.7 INPUT/OUTPUT

WARNING

After a software upgrade the RAM is cleared and then the chart plotter starts with the default settings. Then you have to go into the Input/Output menu and set again the proper input format.

MAP 7wi Plus GPS/MAP 7cwi Plus GPS:

Internal GPS Setup Menu

➤ **[MENU] + [MENU] + "INPUT/OUTPUT" + [ENTER] + "INTERNAL GPS SETUP" + [ENTER]**

Internal GPS	:	Enables (On) or disables (Off) the Internal GPS.
Restart GPS[E]	:	Restarts all GPS processes. Once executed, the message "Done" is shown.
Diff Correction Source	:	Sets what kind of Differential Correction will be used by the GPS between WAAS/EGNOS and RTCM-104 (beacon correction).
Navigation Speed[E]	:	Sets the Navigation Speed among 0.1 Kts (low speed, for marine/pedestrian application), 0.9 Kts (medium speed, for marine application) and 3.0 Kts (high speed, for car application).

MAP 7cwi Plus GPS:

Fish Finder Transmission

The Fish Finder embedded is connected directly to the Port 2. To switch the internal Fish Finder transmission On/Off follow the procedure:

➤ **[MENU] + [MENU] + "INPUT/OUTPUT" + [ENTER] + "FISH FINDER ON/STANDBY" + [ENTER]**

Autopilot Connection[E]

Connect the Autopilot to the serial Port n:

➤ **[MENU] + [MENU] + "INPUT/OUTPUT" + [ENTER] + "PORT n OUTPUT" + [ENTER]. Then choose your preferred setting among the NMEA available settings NMEA 0183 4800-N81-N, NMEA 0180, NMEA 0180/CDX) and press [ENTER] to confirm.**

Where:

n = 1/2/3 for **MAP 11csE Plus GPS**
n = 1/4/5 for **MAP 7cwi Plus GPS**
n = 1/2/4/5 for **MAP 7wi Plus GPS**
n = 1/2/3/4/5 for **MAP 7w Plus GPS/MAP CX Plus**

External NMEA Connection[E]

Connect the External NMEA to the serial Port n:

➤ **[MENU] + [MENU] + "INPUT/OUTPUT" + [ENTER] + "PORT n INPUT" + [ENTER]. Then choose your preferred setting and press [ENTER] to confirm.**

Where:

n = 1/2/3 for **MAP 11csE Plus GPS**
n = 1/4/5 for **MAP 7cwi Plus GPS**
n = 1/2/4/5 for **MAP 7wi Plus GPS**
n = 1/2/3/4/5 for **MAP 7w Plus GPS/MAP CX Plus**

C-COM GSM PLUS Connection[E]

To connect the modem C-COM to the chart plotter follow the procedure:

➤ **[MENU] + [MENU] + "INPUT/OUTPUT" + [ENTER] + "PORT 1 INPUT" + [ENTER] + "C-COM" + [ENTER]**

The modem C-COM can be connected also to the Port 2 (except for **MAP 7cwi Plus GPS)**, Port 3 (except for **MAP 7wi Plus GPS/MAP 7cwi Plus GPS)** and Port 4/5 (except for **MAP 11csE Plus GPS/MAP CX Plus)**, in this case select the format on the used port.

NOTE *The connection is valid for the C-COM IR and C-COM RS232 too.*

NMEA Output

The chart plotter allows customizing the NMEA-0183 sentence transmitted on each port. Each port can transmit a different set of sentences among: GLL, VTG, BOD, XTE, BWC, RMA, RMB, RMC, APB, WCV, GGA, HSC, HDG:

➤ **[MENU] + [MENU] + "INPUT/OUTPUT" + [ENTER] + "PORT n OUTPUT SENTENCES" + [ENTER].**

Where:

n = 1/2/3 for **MAP 11csE Plus GPS**
n = 1/4/5 for **MAP 7cwi Plus GPS**
n = 1/2/4/5 for **MAP 7wi Plus GPS**
n = 1/2/3/4/5 for **MAP 7w Plus GPS/MAP CX Plus**

Send/Receive Routes & Marks[E]

Sets the desired port used for transferring User Points and Routes functions:

➤ **[MENU] + [MENU] + "INPUT/OUTPUT" + [ENTER] + "SEND/REC ROUTES & MARKS" + [ENTER] + "Port n" + [ENTER]**

Where:

n = 1/2/3 for **MAP 11csE Plus GPS**
n = 1/4/5 for **MAP 7cwi Plus GPS**
n = 1/2/4/5 for **MAP 7wi Plus GPS**
n = 1/2/3/4/5 for **MAP 7w Plus GPS/MAP CX Plus**

C-Link[E]

Sets the Primary or Secondary Station (see dedicated Chapter):

➤ **[MENU] + [MENU] + "INPUT/OUTPUT" + [ENTER] + "C-LINK" + [ENTER] + "Secondary Station/Primary station" + [ENTER]**

External NMEA[E]

Sets the displaying or not of the following items (max four items) in the Logic Data Display Page: Speed, Heading (HDG), Depth, Drift, Set, Wind Speed True, Wind Direction True, Wind Speed App, Wind Direction App, Speed Over Ground (SOG), Course Over Ground (COG), Distance, Bearing (BRG), Time To Go (TTG), Cross Track Error (XTE), Velocity Made Good. When any item is receiving or calculated a small black square appears before On/Off indication.

➤ **[MENU] + [MENU] + "INPUT/OUTPUT" + [ENTER] + "EXTERNAL NMEA" + [ENTER]**

External Signal

Sets the External Output:

➤ **[MENU] + [MENU] + "INPUT/OUTPUT" + [ENTER] + "EXTERNAL SIGNAL" + [ENTER]**

Then choose your preferred setting among External Alarm (when activated, this pin goes to GND level. It is used to command an external buzzer), External Power (it is command switch for the Radar. It must be used in conjunction with the Radar Junction box device) and Off.

AUX IN I/O Cable Wiring page

Shows a window containing the AUX IN I/O cable wiring.

➤ **[MENU] + [MENU] + "INPUT/OUTPUT" + [ENTER] + "AUX IN I/O CABLE WIRING" + [ENTER]**

MAP 7w Plus GPS/MAP 7wi Plus GPS/MAP 7cwi Plus GPS:

Quick Disconnect Cable Wiring page

Shows a window containing the cable wiring of the quick disconnect bracket.

➤ **[MENU] + [MENU] + "INPUT/OUTPUT" + [ENTER] + "QUICK DISCONNECT CABLE WIRING" + [ENTER]**

MAP 11csE Plus GPS/MAP cX Plus GPS:

Power I/O Cable Wiring page

Shows a window containing the Power I/O cable wiring.

➤ **[MENU] + [MENU] + "INPUT/OUTPUT" + [ENTER] + "POWER I/O CABLE WIRING" + [ENTER]**

MAP cX Plus GPS:

GPS Cable Wiring page

Shows a window containing the GPS cable wiring.

➤ **[MENU] + [MENU] + "INPUT/OUTPUT" + [ENTER] + "GPS CABLE WIRING" + [ENTER]**

MAP 11csE Plus GPS:

Engine Cable Wiring page[E]

Shows a window containing the engine interface cable wiring.

➤ **[MENU] + [MENU] + "INPUT/OUTPUT" + [ENTER] + "ENGINE CABLE WIRING" + [ENTER]**

MAP 7w Plus GPS/MAP 7wi Plus GPS/MAP 7cwi Plus GPS:

Video Input[E]

By accessing this menu it is possible to see images on the chart plotter display captured from an external video signal source, if connected to the chart plotter. Allows the *"picture-in-picture"* functionality, so a Video Input image can be shown on a image at full screen.

➤ **[MENU] + [MENU] + "INPUT/OUTPUT" + [ENTER] + "VIDEO INPUT" + [ENTER]**

Select Video Input[E]	:	Available options are the following: **Full Video:** Shows the image from the video camera at full screen. **PiP *(Picture In Picture) Video*:** Shows the cartographic image at full screen, with the image from the video camera on a window which can be moved up/down and/or right/left using the cursor key. **None.**
Activate Video Input[E]	:	Activates Video Input from menu. At the activation of the Video Mode the following messages are shown on a dedicated window: "Connnected Video Input Signal is XXXX. The Video Mode will be activated". XXXX can be PAL or NTSC: the software automatically detects the type of Video Input source connected. Once the Video Mode is active use the [LIGHT] and [CONTRAST] keys to adjust video settings. Pressing any other key exits from Video Mode.
Restore Defaults[E]	:	Restores default values of Contrast, Brightness, Backlight, color saturation and Hue phase

MAP 11csE Plus GPS:

Video Input[E]

By accessing this menu it is possible to see images on the chart plotter display captured from an external video signal source, if connected to the chart plotter. Allows the *"picture-in-picture"* functionality, so a Video Input image can be shown on a window and placed over the other Video Input or cartography image at full screen.

➤ **[MENU] + [MENU] + "INPUT/OUTPUT" + [ENTER] + "VIDEO INPUT" + [ENTER]**

Select Video Input[E]	:	Available options are the following: **Full Video 1:** Shows the image from the video camera 1 at full screen. **Full Video 1 + Video 2 Small:** Shows the image from the video camera 1 at full screen, with the image from the video camera 2 on a window which can be moved up/down and/or right/left using the cursor key. **Full Video 2:** Shows the image from the video camera 2 at full screen. **Full Video 2 + Video 1 Small:** Shows the image from the video camera 2 at full screen, with the image from the video camera 1 on a window which can be moved up/down and/or right/left using the cursor key. **PiP *(Picture In Picture)* Video 1:** Shows the cartographic image at full screen, with the image from the video camera 1 on a window which can be moved up/down and/or right/left using the cursor key. **PiP *(Picture In Picture)* Video 2:** Shows the cartographic image at full screen, with the image from the video camera 2 on a window which can be moved up/down and/or right/left using the cursor key. **Auto Switch Video 1 / Video 2:** Shows the image from the video camera 1 and from the video camera 2 at full screen alternately, after time selected in the "Switching Timeout" item (see below). **None.**
Activate Video Input[E]	:	Activates Video Input from menu. At the activation of the Video Mode the following messages are shown on a dedicated window: "Connnected Video Input Signal is XXXX. The Video Mode will be activated". XXXX can be PAL or NTSC: the software automatically detects the type of Video Input source connected. Once the Video Mode is active use the following keys to adjust video settings: press [POWER] and move the cursor to adjust the contrast and backlight, press [ZOOM IN]/[ZOMM OUT] to adjust hue phase. Pressing any other key exits from Video Mode.
Switching Timeout[E]	:	Select the timeout for the Auto Switch option among 5, 10, 30 seconds, 1, 5, 10 minutes.
Restore Defaults[E]	:	Restores default values of Contrast, Brightness, Backlight, color saturation and Hue phase

4.8 C-WEATHER SERVICE[E]

C-Weather Service[E] is an innovative meteorological forecasting system with the ability to visualize the weather forecast, overlaying it on cartography. The weather data is held on Jeppesen Marine's weather server, which can be accessed via a C-COM modem connected to the chart plotter or by using the PC Planner (or the DPS - Dealer Programming System) saving the weather data on a User C-CARD. The weather format data available are:

Data Type	Display
WIND (Speed & Dir)	0
WAVE (Height & Dir)	1
TEMPERATURE (C°)	18°
HUMIDITY (%)	30
VISIBILITY (m)	20
WEATHER TYPE: Sun	
WEATHER TYPE: Rain	
WEATHER TYPE: Fog	
WEATHER TYPE: Snow	
WEATHER TYPE: Clouds	
WEATHER TYPE: Partly Cloudy	
WEATHER TYPE: Thunderstorm	

Fig. 4.8 - Weather data package

Weather Service[E] Menu

To select the menu:

➤ **[MENU] + [MENU] + "WEATHER SERVICE" + [ENTER]**

It opens a sub-menu with the following options.

- **Download**[E]
- **Copy From CARD**[E]
- **Forecast**[E]
- **Real Time View**[E]
- **Type of Data**[E]

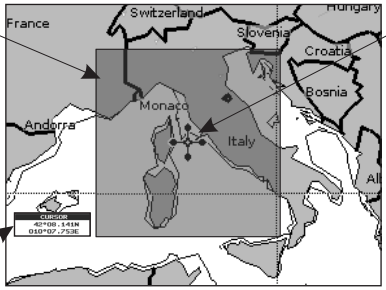
Download[E]

➤ **[MENU] + [MENU] + "WEATHER SERVICE" + [ENTER] + "DOWNLOAD" + [ENTER]**

Allows to connect the software to the Jeppesen Marine weather server and to download Jeppesen Marine weather data directly via C-COM. It activates the following sub-menu:

Select Country to Call	:	Allows the selection of the country to call. The whole telephone number set is automatically updated after every download.
SIM Pin	:	Allows inserting of the PIN of the SIM.
Download Area	:	Allows the weather download: a squared grey area, where the weather data will be downloaded, is centered on cursor position. See the following picture.

Area of coverage of downloaded data is located by default with its centre on the cursor position



Cursor is locked to the gray area. Moving the cursor also moves the gray area allowing locating it over the area where the user wants to download the Meteo forecast.

Indicates the LAT/LON position of the cursor

Fig. 4.8a - Download Area

Press [ENTER] to activate the Weather Download: the whole data package (see the previous "Weather data package" table) are downloaded. [CLEAR] allows to interrupt the data download.
At the end of the operation press [CLEAR] to close the window.

Copy from CARD[E]

➤ **[MENU] + [MENU] + "C-WEATHER SERVICE" + [ENTER] + "COPY FROM CARD" + [ENTER]**

Allows the whole data package Weather loading from C-CARD.

Forecast[E]

➤ **[MENU] + [MENU] + "C-WEATHER SERVICE" + [ENTER] + "FORECAST" + [ENTER]**

Allows selecting the Layer of specific weather data to be displayed on the screen and to change date and time of the forecast preview.
The following functions are available:

Panning	:	default usage of the cursor key is the normal panning function.
Zoom in/out	:	zoom in/out functions are allowed as usual by using [ZOOM IN]/[ZOOM OUT].
Set of date and time	:	[ENTER] to modify date and time values.
Layer selection	:	[MODE] to cycle of the weather layers.
Exit	:	[CLEAR] to close the weather prediction page.

Real Time View[E]

➤ **[MENU] + [MENU] + "C-WEATHER SERVICE" + [ENTER] + "REAL TIME VIEW" + [ENTER]**

The following selections are available:

Real Time View On	:	the data is shown (the area of the download) at the current date and time (received from the GPS).
Real Time View On	:	the Weather data is not displayed.

The layer displayed is the one selected into the previous menu item.

Type of Data[E]

➤ **[MENU] + [MENU] + "C-MAP WEATHER SERVICE" + [ENTER] + "TYPE OF DATA" + [ENTER]**

Allows selecting the type of data, see the previous Fig. 4.8.

4.9 FISH FINDER[E]

The chart plotter combined with the sonar performance of the Fish Finder is one of the most advanced marine navigation system available.

To select the Fish Finder menu, first select one of the pages related to the Fish Finder (note that the Fish Finder display page is available only if the Fish Finder is connected and powered On*):

➤ **[MODE] more times to select the desired page**

Once the Fish Finder page is selected, access the Fish Finder menu by pressing:

➤ **[MENU]**

For more information see the specific User Manual*.

NOTE* *ONLY FOR Map 7cwi Plus GPS: The Fish Finder is embedded into the chart plotter. See also Cap. 7.*

4.10 RADAR[E]

The Radar consists of a scanner unit which illuminates targets with microwave energy and then collects the echoes from those targets. The scanner unit includes the Radar antenna, transmitter, receiver and necessary electronics. The scanner unit is connected to a chart plotter equipped with software capable of displaying the Radar functions.

To select the Radar menu, first select one of the pages related to the Radar:

➤ **[MODE] more times to select the desired page**

Once the Radar page is selected, access the Radar menu by pressing:

➤ **[MENU]**

For more information see the specific User Manual.

NOTE *The Radar display page is available only if the Radar is connected and powered On.*

5. C-LINK^{E}

5.1 C-LINK^{E}

C-Link^{E} system is a feature which allows to sharing the same cartographic data between two Chart Plotter units linked via serial I/O port.
In order to activate C-Link^{E} function, a "MAX data C-CARD" (called REGULAR C-CARD) must be inserted into one of the two chart plotters and a special MAX data C-CARD (called MIRROR C-CARD) must be inserted on the other chart plotter.
The two MAX data C-CARDs must have the same code and revision. So, the MIRROR C-CARD can be utilized only on a chart plotter linked to another chart plotter provided with the equivalent REGULAR C-CARD.
It is important to point out that the two chart plotters must have the update software versions that allow C-Link^{E} function.

How C-Link^{E} system works

When the chart plotter is powered up, it switches into the "Stand-Alone Mode". In this work mode, the chart plotter unit periodically scans all the available C-CARD slots searching for MIRROR C-CARDs. When one or more MIRROR C-CARD is found (in one or both chart plotters) a special connection is established between the chart plotters to enable the MIRROR C-CARDs. If a regular C-CARD which has previously activated a MIRROR C-CARD is removed, even the MIRRORs C-CARD will be not read anymore on the other unit.

C-Link^{E} serial connection

The two chart plotters should be connected via serial ports. Any of the available ports can be used, the software will recognize automatically the serial ports used.
A typical connection is as follows:

Chart Plotter 1		**Chart Plotter 2**
TX	——————>	RX
RX	<——————	TX
GND	<——————>	GND

5.2 C-LINK^{E} NAVIGATION DATA TRANSFER

This function allows transferring C-Link^{E} Navigation Data (Route Name, Destination ID & Position, Next Waypoint ID & Position, Total Route length, Fuel Consumption Rate, ETA, TTG etc.) between two chart plotters linked through the C-Link^{E} system.
The chart plotters can be set to operate in two modes:

- MASTER mode (Primary Chart Plotter)
- SLAVE mode (Secondary Chart Plotter)

When the navigation is activated on the Master chart plotter, the C-Link^{E} navigation data will be continuously sent to the Slave until the navigation is active.
If the Master is navigating to a Single Destination, the Slave will show the Destination position and activate the navigation to it.
If the Master is navigating to a Route, the Slave will show the Route Leg composed by the Destination and the Waypoint after the Destination (Next Waypoint)

and activate the navigation to it.
Any variation to the current C-Link^{E} Navigation Data will be transferred from the Master to the Slave.
The Slave will be provided with a few dedicated pages to show the C-Link^{E} Navigation Data received from the Master.

Operations

Introductive elements

It is important remark, once more, that this function does not transfer the whole route but just the information relative to the navigation. Such information will be removed from the Slave chart plotter as soon as the navigation is terminated.
C-Link^{E} navigation data is exchanged by using two NMEA-0183 C-MAP proprietary sentences: $PCMPN,1 and $PCMPN,2.
When the navigation is activated on the Master, it starts output the C-Link Navigation Data. If the Slave is connected, all C-Link^{E} Navigation Data received are stored in its memory and the navigation is started.

The information sent by the Master consists of the following values:

- Navigation mode (To Single Destination/to a Route)
- Route Name*
- Destination ID
- Destination Position
- Next Waypoint ID*
- Range from Destination to next Waypoint*
- Bearing from Destination to next Waypoint*
- Route Length*
- Distance from Destination to Last Route Waypoint*
- Remaining Route Legs*
- Planned Cruising Speed
- Average Fuel Consumption
- Initial Fuel Load

C-Link^{E} Navigation Data can refer to:

- Single Destination navigation
- Route Following navigation

Values identified by * are sent only for Route Following navigation.
The Destination Icon, Navigation leg (Fix Position to Destination), the Next Waypoint Icon and all other relevant C-Link^{E} Navigation Data will be shown on the Slave chart plotter. Any variation of the C-Link^{E} Navigation Data on the Master will be communicated to the Slave so to keep data aligned on both devices.

Master Chart Plotter

Operating mode

To select the Master mode follow the procedure:

➤ **[MENU] + [MENU] + "Input/Output" + [ENTER] + "C-Link" + [ENTER] + "Primary Station" + [ENTER]**

Master mode is the default factory setting. All regular chart plotters functions are allowed. As soon as the Destination is placed, the Master chart plotter will start transmitting all C-Link^{E} Navigation Data.
In Master mode the C-Link^{E} Navigation Data received from the NMEA port is ignored. So, if the two chart plotters are both operating in Master mode, the C-Link^{E} Navigation Data sent by the other chart plotter never processed.

Under such condition if the navigation is activated on one of the two chart plotters, a warning message will be shown to notify that the C-Link^{E} navigation data will be ignored by the other Chart Plotter.

Slave Chart Plotter

Operating mode

To select the Slave mode follow the procedure:

➤ **[MENU] + [MENU] + "Input/Output" + [ENTER] + "C-Link" + [ENTER] + "Secondary Station" + [ENTER]**

When Slave mode is set, the chart plotter cannot manipulate the C-Link^{E} Navigation Data anymore.

Stop current navigation

If the navigation was already active, it will be disabled as soon as Slave mode is set. An appropriate warning message will be shown to notify that the Navigation is already active and to confirm whether Slave mode can be set.

Inhibit Navigation operation

As soon as Slave mode is set, the Destination cannot be placed anymore either the C-Link^{E} Navigation Data is received from the Master or not. Also, when the C-Link^{E} Navigation Data is received from the Master, it will not be allowed to deactivate the Navigation.

Inhibit Route following

While navigating to the route received from the Master the Destination is reached (either applying distance or perpendicular criteria), the Destination will not be moved to the next Waypoint on the Route.

MOB handling

If the Navigation to the external Destination is active and **[ENTER] + "MOB" + [ENTER]** (on MAP 7v GPS **[MOB]**) is pressed on the Slave chart plotter, the MOB is placed but the navigation to the MOB is not activated.

Notes

While navigating to the external Destination the operating mode is switched to Master mode, the navigation to the external Destination will be terminated. An appropriate warning message will be shown to notify that the Navigation to the external Destination is active and to confirm whether Slave mode can be set. Setting Slave mode, the C-Link^{E} Navigation Data will be deleted.

The C-Link^{E} Navigation Data are deleted at Power Off.

C-Link^{E} Navigation Data: Acquisition and Display

As soon as the C-Link^{E} Navigation Data is received, the Slave parses the information received and executes the relative actions depending on its current working status.

Note *When the Navigation to the external Destination is activated, the Slave Chart Plotter will show all relevant C-Link^{E} Navigation Data exactly like when the Destination is not the external one (Destination Name, DST and BRG to Destination, calculate XTE, calculate TTG etc). These values will be displayed all places where required and they will be used to format NMEA-0183 output data.*

Graphical representation on Map Display

DESCRIPTION	SYMBOL
External Destination - RED Icon	D WPT002
Next Waypoint - GREEN Icon	N WPT003
Navigation Leg - RED Line	

Fig. 5.2 - Graphical Displaying

Route Data Report

When the Navigation to the External Route is received, it will be possible to display the information related to the External Route by entering the Route Data Report.

External Route: **ROUTE001**

Cruising Speed:	12.5 kn	Fuel Consumption Rate:	8.0 l/h
Total Route length:	71.19 Nm	Total Fuel Consumption:	45.5 l
Waypoints in Route:	4	Initial Fuel Load:	255 l
Remaining Waypoints:	4	Remaining Fuel:	209 l

	DST (nm)	TTG: (hh:mm)	ETA: (hh:mm)	Cons Lit
To Dest	11.93	00:57	11:54 AM	7.4
To Next Wpt	15.97	01:16	1:10 PM	12.3
To Last Wpt	83.12	05:41	6:54 PM	54.4

Fig. 5.2a - External route on Route Data Report

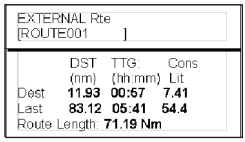
- External Route : Name of the External Route (from $PCMPN,0)
- Cruising Speed : Planned Cruising Speed (from $PCMPN,1)
- Total Route length : Length from First to Last Wpt (from $PCMPN,1)
- Waypoints in Route : No. of Wpts in the Route (from $PCMPN,1)
- Remaining Waypoints : No. of Wpts from Dest to Last Wpt (from $PCMPN,1)
- Fuel Consumption Rate : Planned Fuel Consumption Rate (from $PCMPN,1)
- Total Fuel Consumption : Calculated Fuel consumption to navigate the whole Route
- Initial Fuel Load : Volume of Fuel available before the navigation was started (Liters)
- Remaining Fuel : Volume of Fuel available (Liters)
- Distance to Destination : Distance from Ship to Destination (calculated)
- Distance to Next Wpt : Distance to travel from ship to the Wpt after the Destination (calculated: Distance to Dest + Next Route Leg length)
- Distance to Last Wpt : Distance to travel from ship to the End of the Route (calculated: Distance to Dest

+Distance From Dest to last Wpt received from $PCMPN,1)

- TTG To Destination : Estimated Time to travel the "*Distance to Last Wpt*" (calculated using Cruising Speed)
- TTG To Next Wpt : Estimated Time to travel the "*Distance to Next Waypoint*" (calculated using Cruising Speed)
- TTG to Last Wpt : Estimated Time to travel the "*Distance to Last Wpt*" (calculated using Cruising Speed)
- ETA to Destination : Estimate Time of Arrival to the Destination Point (calculated: Current Time + "*TTG To Destination")*
- ETA to Next Waypoint : Estimate Time of Arrival to the Waypoint after the Destination (calculated: Current Time + "*TTG To Next Waypoint")*
- ETA to Last Wpt : Estimate Time of Arrival to the End of the Route (calculated: Current Time + "*TTG To Last Wpt")*

Quick Info

Route Navigation: Quick Info on the Destination



Route Name, DESTINATION ID Wpt1/4

Distance, TTG and Consumption from Ship to Dest
Distance, TTG and Consumption from Ship to Last Wpt

Fig. 5.2b - Quick Info on Destination

Quick info on Single Destination

Fig. 5.2c - Quick Info on Single Destination

6. MOBILARM System

The MOBILARM is an automated crew monitoring system dedicated to monitoring onboard crew by maintaining a constant link between the crew member and the boat. The instant a man over-board event happens, an automatic alarm is sounded, and the vessels position is logged.
Connect the MOBILARM System to a serial port of the chart plotter.

6.1 SOFTWARE SETUP

After connections have been made, the chart plotter has to be setup to be able to receive NMEA information from the MOBILARM.
When a MOBILARM is connected to the chart plotter, any input port of the NMEA in/out Communication setup menu must be changed to MOBILARM as shown below for communications.

➤ **[MENU] + [MENU] + "INPUT/OUTPUT" + [ENTER] + select any input port you want + [ENTER] + "MOBILARM" + [ENTER]**

The chart plotter continuously verifies the communication status with MOBILARM instruments. If there is no communication for more than one minute, an alarm window appears.

6.2 MOBILARM STATUS

If you want to know information about the MOBILARM connected, follow the procedure:

➤ **[MENU] + [MENU] + "About..." + [ENTER]**

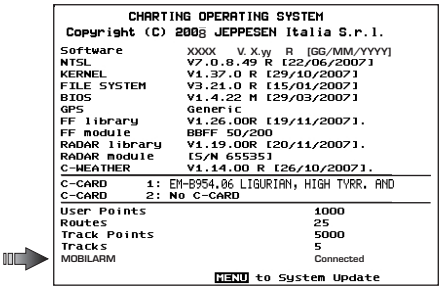


Fig. 6.2 - Example of About page

In the About page a new item appears, related to MOBILARM status, where status can be:

- **Function not Activated** : MOBILARM input format has not been set from the I/O menu;
- **Not detected** : the device has never been detected since the chart plotter was turned On and input format was set to MOBILARM;
- **Connected** : the communication with MOBILARM device

is Ok;

- **Signal Lost** : the device has been detected but now the signal is no longer received;
- **No valid GPS position** : the communication with MOBILARM device is Ok but the GPS position fix is not received.

6.3 MOBILARM PTX

PTX is the personal transponder device that is worn by the crew. If a PTX is disconnected from the system a man over-board alarm is raised. So a MOB Waypoint appears on the chart plotter display. In the following for brevity this MOB Waypoint position is called PTX.

WARNING

Activating navigation to PTX pay attention and don't get too near the man-overboard (don't knock the man down!).

6.3.1 PTX is received

When a PTX has beeen received, the PTX data are saved on the chart plotter memory and the PTX icon appears on the map:

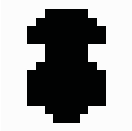


Fig. 6.3.1 - PTX icon

All menus and/or pages are closed and the chart is centered on the PTX received position. The Audible Alarm starts beeping and a pop-up warning window appears to notify that a PTX has been received:

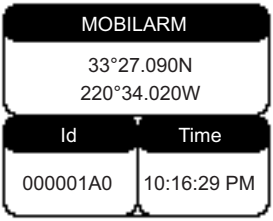


Fig. 6.3.1a - Example of PTX warning window

It is possible to navigate to the received PTX (see Par. 6.4.2) and open the MOBILARM PTX List page (see Par. 6.4.3). Both Goto and List functions also mute the Audible Alarm.

NOTE *The List function is active if more than one PTX is store.*

6.3.2 PTX is received again

When PTX has beeen received again, it is already present on the chart plotter memory.

If the received PTX is NOT the active one, the user must confirmed to navigate to it.

Otherwise if the received PTX is the active one (the PTX on which we are navigating to), navigation data are updated in memory, the new PTX coordinates becames the Destination position and the current Fix position becames the starting position. The map is **not** automatically centered on it.
The PTX icon appears at the new position and a pop-up warning window appears. It is possible to close all menus/data pages (if open) and center the chart on the received PTX (see Par. 6.4.4). Otherwise you could close the alarm window and stay on the active screen.

6.4 PLACING CURSOR ON THE PTX ICON

Placing the cursor on the PTX icon shown on the screen, an information window containing the PTX Identifier, position and status (Overboard or Recovered) appears:

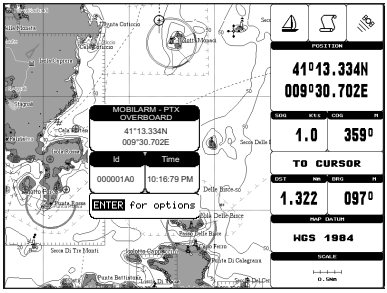


Fig. 6.4 - Example of PTX information window

6.4.1 Delete PTX

The Delete PTX function permamently removes the selected PTX from the chart plotter memory and from the chart display.
Move the cursor over the PTX to delete. Press **[ENTER]**, using the cursor select **"DELETE"** and press **[ENTER]**. A warning pop-up window will be shown. Select **"YES"** and press **[ENTER]**.

6.4.2 Goto PTX

The Goto PTX function activates the navigation to the selected PTX.
Press **[ENTER]**, using the cursor select **"GOTO"** and press **[ENTER]**.

If the navigation is set to the selected PTX, to terminate the navigation press **[ENTER]**, using the cursor select **"STOP GOTO"** and press **[ENTER]**.

6.4.3 MOBILARM PTX List Page

The MOBILARM Alarm Status List shows the list of all PTX that returned an alarm event. To obtain the page press **[ENTER]**, using the cursor select **"LIST"** and press **[ENTER].**
Another mode to select the MOBILARM Alarm status List is the following:

- **[MENU] + [MENU] + "MOBILARM" + [ENTER]**

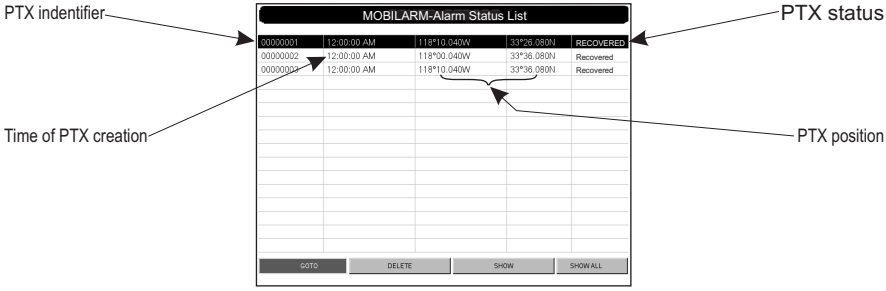


Fig. 6.4.3 - Example of MOBILARM PTX List page

This page allows you to:

GOTO	: Activates navigation to the selected PTX. Once the navigation has been activated, close all menus/data pages (if open) and center the chart selected PTX.
DELETE	: Deletes the selected PTX.
SHOW	: Centers the chart on the selected PTX.
SHOW ALL	: Selects the best chart scale to see al PTX icons on the map at the same time.

6.4.4 Show PTX

The Show function is available when PTX has beeen received again, it is already present on the chart plotter memory and it is the active one.
Press **[ENTER]**, using the cursor select **"SHOW"** and press **[ENTER]** to close all menus/data pages (if open) and center the chart on the received PTX.

7. Fish Finder ONLY FOR MAP 7 CWI PLUS GPS

The Fish Finder consists of a high power transmitter, sensitive receiver and a transducer. The Fish Finder sends an electrical pulse to the transducer which contains an element that converts the pulse into acoustic (sound) wave which is sent through the water. As this wave travels from the transducer to the bottom, it may strike fish, structures, thermoclines (temperature changes in the water). When the wave strikes an object(s) a certain amount of the wave is reflected back to the transducer depending on the composition and shape of the object. When the reflected wave is returned to the transducer it is converted into a voltage and is amplified by the receiver, processed and sent to the display. The speed of sound in water is roughly 4800 ft./sec, so the time lapse between the transmitted signal and the received echo can be measured and the distance to the object determined.

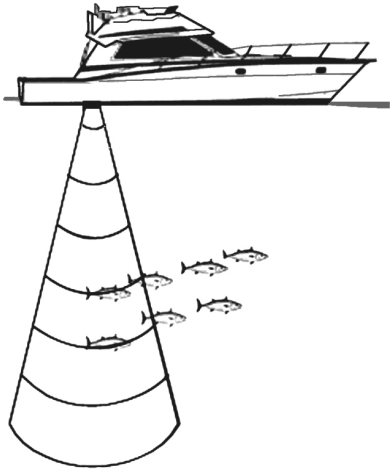


Fig. 7 - Fish Finder working principle

7.1 SETTING THE INTERNAL FISH FINDER ON

The Fish Finder driver is embedded on the chart plotter: it is connected directly to the dedicated serial Port2.

To switch the internal Fish Finder transmission On follow the procedure:

- **[MENU] + [MENU] + "INPUT/OUTPUT" + [ENTER] + "FISH FINDER ON" + [ENTER]**

NOTE *It is not possible to connect any external Fish Finder unit to the chart plotter.*

7.2 UNDERSTANDING THE FISH FINDER PAGE

The display on chart plotters shows a history of time of the echoes received by the transducer. The chart plotters have a menu that allows adjustments to receiver sensitivity, depth range and scrolling speed of the Fish Finder display.

1. Warning message
2. Echogram window
3. Color Bar
4. Digital Depth
5. Water temperature
6. Alarm Bar
7. Depth ruler
8. Variable Depth Marker (VDM)
9. Zoom Bar
10. A-Scope
11. Operating Frequency

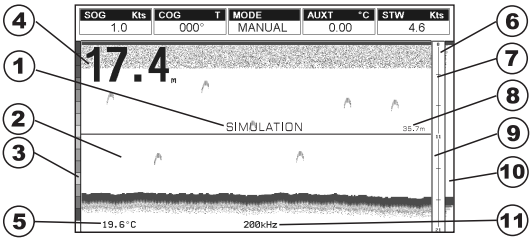


Fig. 7.2 - The Fish Finder page

The following is a short description of terms listed in the previous Fig. 7.2:

1 Warning Message
Flashing label "Simulation" when the echo sounder is in Simulation mode.

2 Echogram window
Graphic presentation of sonar soundings recorded as a continuous profile scrolling across the screen from right to left. Such recordings represent the image of the water beneath your boat, items appear as they pass under your transducer; the items on the right side of the screen are closer to you than those on the left. The correct interpretation of the Echogram allows retrieving useful information about what is under the boat. See the following Par. 7.2.2 for more information.

3 Color Bar
Colored scale located on the left side of the screen that shows the colors used in the Echogram to represent the echoes strength. The color on the top of the bar represents the maximum sonar strength, while the color on the bottom of the bar represents the minimum sonar strength.

4 Digital Depth
Readout of the current bottom depth.

5 Water Temperature
Readout of the current water temperature returned by the TEMP 1 sensor included into specific transducers.

6 Alarm Bar
Bar located on the right side of the Depth Ruler, showing the shallow water and deep water alarm values. The alarm is triggered when depth is outside the range.

7 Depth Ruler
Vertical graduated bar located along the right side of the screen. It is a scale which reflects the depth of the area being displayed.

(8) Variable Depth Marker (VDM)
Horizontal line on to the Echogram window with a depth label. The up/down cursor keys can move it up and down. The label displays the depth of the cursor position. It can be moved to any location pinpointing the depth of a target.

(9) Zoom Bar
Bar located on the left side of the Depth Ruler, showing the portion of the Echogram currently represented in the zoomed window (on the left part of the screen). It is turned On selecting the Echo Sounder Split page.

(10) A-Scope
A real time representation of fish and bottom features passing through the beam of the transducer. It is drawn as horizontal lines whose length and hue is proportional to the sonar strength returned. When the default palette is selected, the strongest sonar returns will be shown as the color displayed of the top of Color Bar while the weakest as the bottom color.

(11) Operating Frequency
Readout of the selected operating frequency.

7.2.1 Understanding the Echogram display

The main elements that can be easily distinguished into an Echogram are:

(1) Fishes
(2) Thermoclines
(3) White Line
(4) Surface Clutter
(5) Structures
(6) Bottom Echo Profile

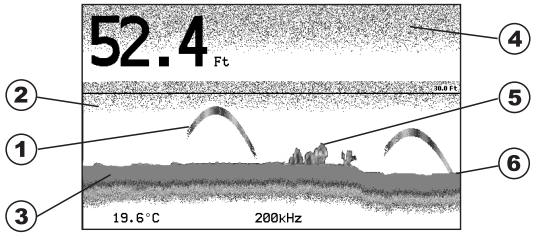


Fig. 7.2.1 - The Fish Finder Echogram

(1) Fishes
Fishes are represented as arcs because of the cone angle of the transducer. In fact as the boat passes over the fish the leading edge of the cone strikes the fish, causing a display pixel to be turned on. As the boat passes over the fish, the distance to the fish decreases turning each pixel on at a shallower depth on the display. When the boat is directly over the fish, the first half of the arch is formed and since the fish is closer to the boat, the signal is stronger and the arch is thicker. As the boat moves away from the fish, the distance increases and the pixels appear at progressively deeper depths forming the remaining half of the arch.

(2) Thermoclines
Are the zones where two layers of different water temperatures meet. The greater the temperature differential, the thicker the thermocline is shown on the screen. Thermoclines are represented as horizontal stripes of noise. They are very important for fishing since often many species of game fish like to suspend in, just above, or just below the thermoclines.

③ **White Line**
The White Line shows the difference between hard, soft bottoms and even distinguishes between fishes and structures located near the bottom. In this way it is easier to tell the difference between a hard and soft bottom and even to distinguish fishes and structures located nearby the bottom. For example, a soft, muddy or weedy bottom returns a weaker echo that is shown with a narrow white line while a hard bottom returns a strong echo that causes a wide white bottom line.

④ **Surface Clutter**
Appears like noise at the top of the screen extending many feet below the surface. It's caused by many things, including air bubbles, bait fish, plankton and algae.

⑤ **Structures**
Generally, the term "structure" is used to identify objects like wrecks and weeds rising from the bottom.

⑥ **Bottom Echo Profile**
Bottom profile recorded by the Fish Finder. When the echo sounder is set in auto-range mode it is automatically kept in the lower half of the screen.

Other Elements
Large anchoring cables are returned by the echo sounder as very long and narrow arcs on the screen.

7.3 DISPLAYING THE FISH FINDER PAGE

This section will take you through the frequently used operations and assist you to customize the look of the chart plotter using the Fish Finder.

7.3.1 How to select the Fish Finder page

To change the Fish Finder page displayed follow the procedure:

➢ **[MODE] more times**

7.3.2 Fish Finder Full page

To display the Fish Finder Full Page Echogram, follow this procedure:

➢ **[MODE] more times until the Fish Finder Full page is displayed**

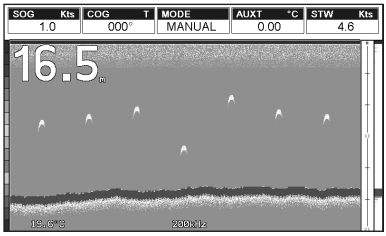


Fig. 7.3.2 - Example of 200kHz Fish Finder Full page

NOTE *The frequency displayed depends on the selection done in the Frequency item (see Par 7.6.7).*

The MENU key
Pressing **[MENU]** activates the Fish Finder Setup menu (see Par. 7.6). Pressing **[MENU]** subsequent times toggles between the Fish Finder Setup menu and the

Functions menu.

The Cursor key
Moving the Cursor key up/down adjusts the Variable Depth Marker (VDM) up or down on the screen.

The ENTER key
Pressing **[ENTER]** activates the Sensitivity menu (see Par. 7.6.9) that allows tuning the Gain, the Surface Noise Filter and the STC.

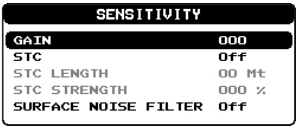


Fig. 7.3.2a - Sensitivity sub-menu

Pressing **[CLEAR]** turns off the Sensitivity menu.

The CLEAR key
By pressing **[CLEAR]** the Variable Depth Marker (VDM) is hidden.

The ZOOM IN and ZOOM OUT keys
From this page pressing **[ZOOM IN]** once changes to Zoom 2X, pressing **[ZOOM IN]** twice changes to Zoom 4X, while pressing **[ZOOM OUT]** reverts to Zoom 2X and no zoom.

7.3.3 Dual Frequency page

To display the Fish Finder Dual Echogram, follow this procedure:

➤ **[MODE] more times until the Fish Finder Dual Frequency page is displayed**

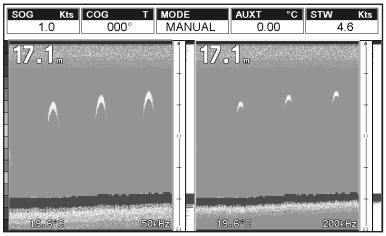


Fig. 7.3.3 - Fish Finder Dual Frequency mode

The Cursor key
Moving the cursor to the right or the left moves the Variable Depth Marker (VDM) between the 50 and 200kHz displays. Moving the cursor up or down will move the VDM up and down. Press **[CLEAR]** to hide the VDM.

The ZOOM IN and ZOOM OUT keys
From this page pressing **[ZOOM IN]** once changes to Zoom 2X, pressing **[ZOOM IN]** twice changes to Zoom 4X, while pressing **[ZOOM OUT]** reverts to Zoom 2X and no zoom.

7.3.4 Zoom page

To display the zoomed Fish Finder page on the left half of the screen and the unzoomed Fish Finder Echogram on the right half of the screen, follow this procedure:

➤ **[MODE] more times until the Fish Finder Zoom page is displayed**

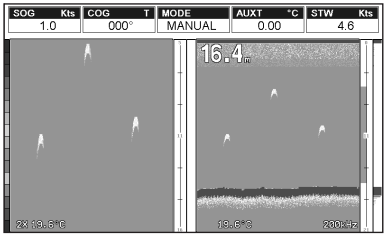


Fig. 7.3.4 - Fish Finder Zoom Page

The Depth Cursor is shown only on the unzoomed Fish Finder Echogram.

The ZOOM IN and ZOOM OUT keys
When in this page pressing **[ZOOM IN]** changes to Zoom 4X, pressing **[ZOOM OUT]** changes to Zoom 2X.

7.3.5 Chart/Fish page

To display the Chart page on the left half of the screen and the Fish Finder Echogram on the right half of the screen, follow this procedure:

➤ **[MODE] more times until the Fish Finder Chart/Fish page is displayed**

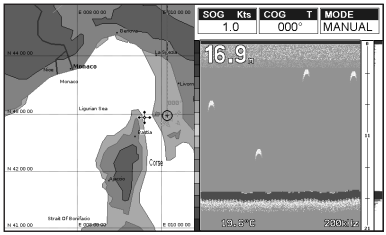


Fig. 7.3.5 - Fish Finder Chart/Fish page

The MENU key (to change the active window)
When in Chart/Fish mode pressing **[MENU]**:

- if the focus (the active window) in on the Chart, the Functions menu is shown. Pressing again **[MENU]** opens the Fish Finder Setup menu and moves the focus to the Fish Finder.
- if the focus (the active window) in on the Fish Finder, the Fish Finder Setup menu is shown. Pressing again **[MENU]** opens the Functions menu and moves the focus to the Chart.

NOTE *When focus is on the Chart page, all keys work in cartography standard mode.*

7.3.6 Fish Finder and Radar pages

CAUTION

The following Radar display pages are available only if the Radar is connected and powered On.

To display the Radar page on the left half of the screen and the Fish Finder Echogram on the right half of the screen, follow this procedure:

➤ **[MODE] more times until the Fish Finder Radar/FF page is displayed**

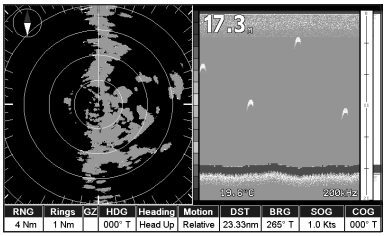


Fig. 7.3.6 - Radar/FF page

Otherwise to display the Radar and Fish Finder Combo pages, follow this procedure:

➤ **[MODE] more times until the Fish Finder Radar/FF/Chart/Nav Data page is displayed**

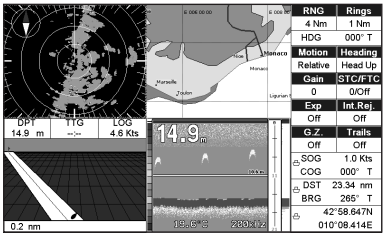


Fig. 7.3.6a - Radar/FF/Chart/Nav Data page

NOTE *The Radar/FF/Chart/Nav Data page is available only if a Target has been set.*

When in Split/Combo pages, the active view is highlighted by a focus (Yellow frame). The keyboard commands are related to that focused view. To move the focus press **[MENU]** twice.

7.4 ZOOM MODES

7.4.1 The Bottom Lock Zoom

The Bottom Lock Zoom mode is activated when the Fish Finder is in Auto Range or Bottom Lock mode (see Par. 7.5.3) and the Variable Depth Marker (VDM) is not displayed on the screen.
In Bottom Lock Zoom mode the Fish Finder Echogram is automatically moved up/down as to keep the Bottom Line always visible in the lower half of the screen.

NOTE *Moving the Cursor key up/down displays the Variable Depth Marker (VDM) switching the Fish Finder in Marker Zoom mode.*

7.4.2 The Marker Zoom

The Marker Zoom mode is activated either when the Fish Finder is in Manual Range mode (see Par. 7.5.3) or the Depth Cursor is displayed on the screen.
In Marker Zoom mode the Fish Finder Echogram position is controlled by moving the Variable Depth Marker (VDM) and pressing and holding **[ENTER]** for 1 second on the selected position. Moving the Variable Depth Marker (VDM) over the top or below the bottom of the screen, automatically moves up/down the current zoomed Echogram view and re-position the Variable Depth Marker (VDM) at the center of the screen.

NOTE *Pressing **[CLEAR]** hides the Depth Cursor and if the Fish Finder is in Auto Range or Bottom Lock mode switches into Bottom Lock Zoom mode.*

7.5 FISH FINDER SETUP MENU

The Fish Finder Setup menu provides access to additional functions, setup and layout/data field options. From the Fish Finder page, access this menu by pressing:

➤ **[MENU]**

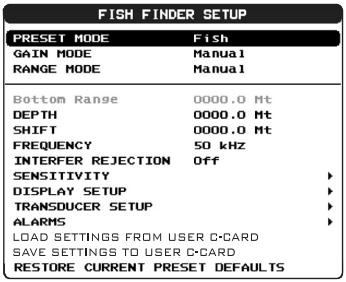


Fig. 7.5 - Fish Finder Setup menu

7.5.1 Preset Mode

Preset modes are pre-defined settings of the Fish Finder operating parameters. You can use them to quickly set the Fish Finder in the most commonly used operating modes. These are Cruise (sets the Fish Finder in full auto mode with the sensitivity settings optimized for displaying at best the bottom) and Fish (sets the Fish Finder in full auto mode with the sensitivity setting optimized for target searching). See the following table.

➤ **[MENU] + "PRESET MODE" + [ENTER]**

Fish	:	Gain Mode = Auto, Range Mode = Auto, Frequency = do not change, Shift = 0, STC = Short if Freq=200kHz and Mid if Freq=50kHz, Scrolling Speed = 10, Fish Symbols = Echo, A-Scope = On, Surface Noise Filter = Off.
Cruise	:	Gain Mode = Auto, Range Mode = Auto, Frequency = do not change, Shift = 0, STC = Short if Freq=200kHz and Mid if Freq=50kHz, Scrolling Speed = 10, Fish Symbols = Echo, A-Scope = On, Surface Noise Filter = 4.

7.5.2 Gain Mode

Selects Auto or Manual.

➤ **[MENU] + "GAIN MODE" + [ENTER]**

7.5.3 Range Mode

Selects among Manual, Auto Range and Bottom Lock. When in **Manual Range Mode** it is possible to set Shift (the offset from the surface) (see Par. 7.5.5) and Depth (see Par. 7.5.4) on which the Fish Finder shall operate. When in **Auto Range Mode** the Fish Finder determines automatically the range as to keep the bottom visible in the lower left of the screen. In this mode, Shift is always set to 0. In **Bottom Lock Mode** the Fish Finder automatically tracks the range around the bottom specified by the Bottom Range value.

➤ **[MENU] + "RANGE MODE" + [ENTER]**

7.5.4 Depth

This option is available only when Range Mode is Manual and it is disabled in Auto Range and Bottom Lock Mode.

➤ **[MENU] + "DEPTH" + [ENTER]**

7.5.5 Shift

This option is available only when Range Mode is Manual and it is disabled in Auto

Range and Bottom Lock Mode.

➤ **[MENU] + "SHIFT" + [ENTER]**

NOTE *The bottom Range, Depth, Shift will apply to the currently selected frequency.*

7.5.6 Bottom Range

This option is available when Range Mode is Bottom Lock.

➤ **[MENU] + "BOTTOM RANGE" + [ENTER]**

7.5.7 Frequency

Allows you to choose the frequency between Auto, 50 kHz or 200 kHz when single frequency page is selected.

➤ **[MENU] + "FREQUENCY" + [ENTER]**

7.5.8 Interference Rejection

Selects a filter to remove interference from other Fish Finders.

➤ **[MENU] + "INTERFER REJECT" + [ENTER]**

7.5.9 Sensitivity Menu

The Sensitivity menu is accessible both from the Fish Finder Setup menu and by pressing **[ENTER]** when in Fish Finder pages. All settings in the Sensitivity menu are related to the Frequency selected.

➤ **[MENU] + "SENSITIVITY" + [ENTER]**

Frequency[1]	:	**ONLY IN THE DUAL FREQUENCY PAGE** Allows you to select the Frequency to which the Sensitivity parameters are applied.
Gain	:	Allows you to control the Gain of the unit's receiver. To see more details on the screen, increase the receiver sensitivity by selecting a higher gain percentage. If there is too much detail or if the screen is cluttered, lowering the sensitivity may increase the clarity of the display.
STC	:	Sensitivity Time Constant: it is a time varying gain curve which attenuates the sonar receiver gain in shallow water, increasing the gain gradually as the depth increases. This is for the purpose of filtering out surface clutter.
STC Length	:	If STC is Custom, it is possible to change the Length of the Sensitivity Time Constant.
STC Strenth	:	If STC is Custom, it is possible to change the Strength of the Sensitivity Time Constant.
Surf Noise Filter[2]	:	This function implements an advanced time varying filter that allows suppressing the surface clutter efficiently while leaving fish targets visible.

NOTE[1] *The Frequency value is only displayed: to select the desired frequency see the previous Par. 7.5.7.*

NOTE[2] *Thus imposing the capability of the Fish Finder to correctly detect the weakest echoes coming from a very deep bottom.*

7.5.10 Display Setup Menu

The Display Setup Menu allows you to change the color scheme of the Fish Finder display, adjusts the chart scrolling rate, enables or disables the White Line and allows determining the graphical representation of fishes.

➤ **[MENU] + "DISPLAY SETUP" + [ENTER]**

Color Settings	:	Allows you to change the color scheme of the Fish Finder display. The available colors are Blue Background, White Background, Black Background, Gray Scale and Reversed Gray Scale.
Scrolling Speed	:	Adjusts the chart scrolling rate. Note that the scrolling rate is limited by the sound speed and the depth according with the following relation: the deeper the setting, the slower the scrolling rate. 100% is the maximum possible.
White Line	:	Controls how the chart plotter displays information about the bottom type (hard or soft).
Fish Symbols	:	Allows determining the graphical representation of underwater suspended targets: Echo/Echo+Icon/ Echo+Icon+Depth/Echo+Depth/Icon/Icon+Depth. The Fish icons displayed are among four different shapes depending on the size of the Target (Small, Med, Big, Huge).
Water Temperature	:	Allows you to choose the Water Temperature label displayed over the echogram between Primary and External.

7.5.11 Transducer Setup Menu

The Transducer Setup menu contains settings that does not require frequent changes.

➤ **[MENU] + "TRANSDUCER SETUP" + [ENTER]**

Keel Offset	:	It is the transducer depth offset from the surface. This makes it possible to measure depth from the surface instead of from the transducer's location.
Calibrate Sound Speed	:	Allows calibrating the value of Sound Speed in the water, depending on the water temperature and salinity.
Calibrate Water Speed	:	Allows calibrating the value of Water Speed sensor. The calibration value, in the range between -10% to +10%, will be applied to the water speed from the transducer.
Calibrate Water Temp	:	Allows the calibration on the Water Temperature sensor. Using the readings from a precise temperature measuring device, insert here a positive/negative offset to display right value on Fish Finder screens.
Calibrate Aux Temp	:	Allows the calibration of the Aux Temperature sensor. Using the readings from a precise temperature measuring device, insert here a positive/negative offset to display right value on FF screens.
Set Defaults Settings	:	Restores the default values

7.5.12 Alarms Menu

The Alarms menu allows you to define additional sonar alarm settings for Fish Alarm, Shallow Alarm, Depth Alarm and Temperature Upper/Lower/Rate.

➤ **[MENU] + "ALARMS" + [ENTER]**

Shallow Alarm	:	Triggers an alarm when depth becomes shallower than the value set.
Deep Water Alarm	:	Triggers an alarm when depth becomes deeper than the value set.
Temp Upper	:	Triggers an alarm when the transducer reports a temperature (from TEMP 1 sensor) above the value set.
Temp Lower	:	Triggers an alarm when the transducer reports a temperature (from TEMP 1 sensor) below the value set.
Temp Rate	:	Triggers an alarm when the transducer reports a temperature (from TEMP 1 sensor) variation rate above the value set.
Fish Alarm	:	The options for Fish Alarm set the size of the fishes that, if detected by the unit, switches an alarm to sound. These options are: Off, Small, Medium, Big and Huge. The alarm sounds if the set size (or bigger) is detected.

7.5.13 Load Settings from User C-Card

Load the complete settings from the User CARD and changes the active menu settings.

➤ **[MENU] + "LOAD SETTINGS FROM USER C-CARD" + [ENTER]**

7.5.14 Save Settings to User C-Card

This is useful to avoid the user having to retune up Fish Finder after a Clear RAM operation or a software update.

➤ **[MENU] + "SAVE SETTINGS TO USER C-CARD" + [ENTER]**

7.5.15 Restore Current Preset Defaults

Restores the default values only for the current presets (see Par. 7.5.1, Preset Mode) and does not affect the other presets.

➤ **[MENU] + "RESTORE CURRENT PRESET DEFAULTS" + [ENTER]**

7.6 TRANSDUCERS

The transducer is a device that transmits and receives sound waves into the water. The active component inside the transducer is commonly referred to as an element but actually is a piezoelectric ceramic material.

Please refer to your dealer and/or installer to choose your transducer. VDO suggest **AIRMAR** transducers.

8. Maintenance

This chapter gives information on routine maintenance and problem solving associated with the chart plotter.

8.1 SYSTEM TEST

If you have connected your position-finding device according to the instructions, and chosen the proper menu selection for your device, and are still having problems with your chart plotter, the extended auto-test should help determine the problem. Make sure the chart plotter is turned Off. While pressing and holding any other key, turn the chart plotter On. A new menu will appear on the display. Use the cursor key to select the desired test: this will display in reverse video. To choose the test press **[ENTER]**. To exit from any submenu press **[CLEAR]**. To exit from the System Test turn Off the chart plotter.

RAM Menu

RAM Test: Verifies the integrity of the RAM chips. If on the screen the message "ERROR" appears, the RAM is physically damaged.
RAM Clear: Clears internal memory. If the chart plotter exhibits unusual behaviour, or appears to be malfunctioning, it may be possible to correct the problem by clearing RAM. This operation will erase all Marks, Routes, stored Track plots and destinations. It will also return all selections (Input Data Format, Autopilot selection, etc.) to original default values. Before this step, you have the option of saving user Marks, Track history and Routes to a User C-CARD (this is an optional purchase from your dealer). To confirm to clear RAM press **[ENTER]** again (but if this time you do not wish to clear RAM press **[CLEAR]**).

DIM Menu

Contrast: Each time you press the cursor key to right, the screen will decrease brightness, when you press the left key the brightness will increase.
Backlight: Sets the backlight. It operates in similar mode as Contrast.

Cartridges

Background ROM: Tests the WorldWide Background.
C-CARD Test: Tests the C-CARD. There are four possible situations:

- If there is a C-CARD inserted in the slot and there is not a malfunction, the name of the C-CARD zone and the message "OK" are shown
- If there is a C-CARD inserted in the slot, but it is damaged C-CARD, the name of the C-CARD zone and/or the message "Faulty" are shown
- If there is not any C-CARD inserted in the slot, the message "not present" is shown
- If there is a User C-CARD inserted in the slot, the message "USER C-CARD" is shown

C-CARD Connector: While a C-CARD is inserted in the slot, if the counter increases, there is a malfunction reading it.

Serial Ports

Change parameters: Changes the parameters of the serial interface. This menu allows to select the **Port** (Signal Source), the **Baud Rate**, the **Data Bits** (Word Length) between 7 or 8, the **Parity** between even, odd or none, the **Stop Bits** between 1 or 2.

Input Data Display: Allows the chart plotter to act as a computer terminal and display the incoming data exactly as it is received. If the data displayed on the screen is unrecognizable, you may have selected the wrong input parameters for your particular receiver. Check your receiver manual to be sure that you have selected the proper interface format. If the screen is blank, the connection may be interrupted, and no data is being received. Use **[ZOOM IN]** to stop (or continue after pause) data displaying, **[ENTER]** to show data in hex or ASCII mode (normal or small) and **[CLEAR]** to exit.

Modem test

Checks the Modem connections. Press **[ENTER]** to select the desired Port related to the connections made, to the Port to which the Modem C-COM is connected.

External Alarm

Checks the External Alarm.

MAP 11csE Plus GPS:

Engine Menu

The transfer of the operating hours is handled differently by different engines. Some engines transmit the operating hours – and all other engine data too – at specific intervals of time. Others transmit the operating hours only on request. To ensure that the plotter sends this request regularly, the '*Engine Hours Request*' must be switched to ON.

9. Terms

- **ALT = Altitude**
  Altitude of GPS Antenna on the medium sea level.
- **Alter = Alternate Solution (TD Coordinates System)**
  Parameter selected by the user that is applied in the conversion of TD values to geographical coordinates Lat/Lon. It defines which of the two possible solutions can be used.
- **Arrival Time**
  Estimated time of day you will reach your destination, based on your current Speed and Track from GPS.
- **ASF = Additional Secondary phase Factor (TD Coordinates System)**
  Correction to TD values which can be inserted by the user.
- **Azimuth**
  Angular measurement from the horizon to a satellite or another object.
- **AWD = Apparent Wind Direction**
  Direction from which the Wind appears to blow relative to a moving point (also called Relative Wind Direction).
- **AWS = Apparent Wind Speed**
  Speed at which the Wind appears to blow relative to a moving point (also called Relative Wind Speed).
- **Beacon**
  A prominent, specially constructed object forming a conspicuous vertical mark as a fixed aid to navigation.
- **Boost Pressure**
  Boost pressure in boosted engine.
- **Buoy**
  Floating object moored to the sea bottom in a particular (charted) place, as an aid to navigation.
- **Buoys and Beacons**
  Used to indicate to mariners recommended or established routes, underwater dangers, restrictions and regulations.
- **BRG = Bearing**
  Angle between the North (True or Magnetic) and a destination. The horizontal direction of one terrestrial point from another referring to the North (True or Magnetic). It is often used to indicate the direction to follow to reach the destination.
- **CAN (Controller Area Network)**
  Standardized interface for engine data. CAN SAE J1939 is used.
- **Chain (Loran-C GRI)**
  Loran chains are groups of transmitting stations that use timed radio pulse transmissions. In each of these chains there is a master station and two or more slave or secondary stations. Stations belonging to a same chain transmit pulses in timing groups: a different time base identifies each chain. The time base of each chain is the Group Repetition Interval or GRI. This GRI identifies the chain in unique mode. For example the GRI = 4990 identifies the chain of Central Pacific zone.

- **COG = Course Over Ground**
  Direction of the path over ground actually followed by a vessel.
- **CTS = Course To Steer**
  Optimum direction the boat should be steered in order to efficiently make headway back to the course line while also proceeding toward the destination Waypoint.
- **Cultural Features**
  Any man-made topographic feature as built-up area, buildings, roads.
- **Datum**
  Latitude and Longitude lines printed on any map are based on certain models of the shape of the earth: these models are called Datum or Coordinate Systems. There are many different Datum in use, each one gives different Lat/Lon positions for an identical point on the surface of the earth.
- **Dead Reckoning**
  Procedure to determine the current position of a vessel by applying to the last known position the way that has been made (since the last known position was received). This procedure is normally based on the last received GPS position, Speed and Course or to the last received GPS position, Log Speed and Heading.
- **Default**
  Indicates the original factory setting for any menu selection. The default values are set after a Master Reset (RAM Clear).
- **Depth Areas**
  Sea areas included in the user selectable range of minimum and maximum depth limits. The sea area that is **beyond** the selected range is filled by an uniform white color, the sea area that is **inside** the selected range is filled by ordinary multicolor shading. The Spot Soundings and Depth Contours are displayed on the range only.
- **Depth Line**
  (Also called Bathymetric Line) Imaginary line connecting points of equal water depth.
- **Destination**
  In order to tag on the chart the point, towards which the ship is Heading, you can use a special mark, called destination. When the destination is placed, all navigation data referred to this point.
- **DGPS = Differential GPS**
  Provides even greater positioning accuracy than standard GPS.
- **DPT = Depth from Transducer**
  Water Depth below the Transducer. Distance from the Depth Transducer to the ground.
- **DST = Distance**
  Geographical distance between two points on the map.
- **Easy Link**
  VDO-specific interface to actuate slave indicators.
- **EBL = Electronic Bearing Line**
  EBL is a dotted line: the origin of the line is the ship's or cursor position.
- **Engine Speed**
  Engine’s rotational speed
- **ETA = Estimated Time of Arrival**
  Predicted time of reaching a destination or Waypoint.
- **Exhaust Gas Temperature**
  Exhaust gas temperature after the turbocharger.
- **File**
  Collection of information (of the same type) stored on a User C-CARD. Each

file must have a unique name, ideally one that describes its contents. Filenames are kept in a directory on each User C-CARD.

- **Fix**
  Current position of the vessel provided by the GPS (connected to the chart plotter or built-in) or other positioning systems.
- **Fix Status**
  Indicates the quality of the position fix signal.
- **Fuel Rate**
  Engine's current momentary fuel consumption.
- **GNSS = Global Navigation Satellite System**
  Name used to indicate any single or combined navigation system based on satellites. The current available satellites systems are: GPS, GLONASS and the combined GPS and GLONASS.
- **Goto**
  Defines the destination point and activates the navigation to it. The destination can be placed on any location of the map, an existing Mark point or on a pre-defined Route.
- **GPS = Global Positioning System**
  Satellite based navigation system operated by the US Department of Defence. It gives the navigator a position 24 hours a day, 365 days a year under any weather conditions.
- **HDG = Heading**
  Horizontal direction in which a ship actually points or heads in any moment (see also COG).
- **HDOP = Horizontal Dilution Of Precision**
  Parameter indicating the precision of the positioning system (GPS). The smaller HDOP value indicates higher position accurately.
- **Home mode**
  All operations refer to the ship's position.
- **Intake Manifold Temperature**
  Intake air temperature.
- **Landmarks**
  Landmarks are any prominent object such as monument, building, silo, tower, mast, ..., on land which can be used in determining a location or a direction.
- **Latitude**
  Angular distance North or South of the equator measured by lines encircling the earth parallel to the equator in degrees from 0° to 90°.
- **LAT/LON**
  Coordinate system using Latitude and Longitude coordinates to define a position on earth.
- **Lat/Lon Grid**
  Grid of parallels (of Latitude) and meridians (of Longitude) drawn on the map.
- **LOG Speed**
  Speed of the vessel relative to the water, provided by an instrument with a submerged transducer for measuring the distance/speed travelled by the vessel.
- **Longitude**
  Angular distance East or West of the prime meridian (Greenwich meridian) as measured by lines perpendicular to the parallels and converging at the poles from 0° to 180°.
- **Loran**
  Positioning system which determines the current position of the vessel by measuring the difference in the times of reception of synchronized radio pulse signals transmitted by two or more fixed stations.

- **Magnetic Deviation**
  Value, expressed in degrees East or West that indicates the direction in which the north indicator on the compass card is offset from the magnetic north (the difference expressed in degrees East or West between the compass north and the magnetic north).
- **Magnetic Variation**
  Angle between the magnetic and geographic meridians at any place, expressed in degrees West or East to indicate the direction of magnetic North from true North. It changes from point to point, and (at the same point) with time.
- **Mark**
  Reference point related to cursor position. Typically it represents by an icon and label under Mark.
- **Natural Features**
  Any topographic feature formed by the action of natural processes: coastlines, relief, glaciers.
- **Navigate mode**
  Operating mode (called also Home mode): all operations refer to the ship's position. Navigate or Navigation mode is also used to indicate that the destination is placed.
- **NMEA-0183**
  The NMEA-0183 Data Interface Standard was developed by the National Marine Electronics Association of America. It is an international standard that enables equipment from many different manufactures to be connected together and share information.
- **OSGB = Ordinance Survey of Great Britain**
  Coordinate system describing only Great Britain charts. Generally used with GBR36 datum, which also describes only Great Britain charts. This coordinate system cannot be used in any other part of the world.
- **Pair**
  Two selectable secondary stations, of a Loran-C chain, which are used to calculate the TD (Time Difference) position of a point in the map area covered by the selected Loran-C chain.
- **Percent Load**
  Percentage load on the engine at a particular speed.
- **Pictures & Diagrams**
  The MAX data format allows assigning one or more image to any cartographic object. These *Pictures* are typically used to facilitate the identification of cartographic objects or places around the map: they can be the landscape layout nearby a harbour, the shape of a bridge or of a buoy etc. On some objects, such as bridges, the image associated can represent the *Diagram* representing the shape of the objects and the various characteristics (length, height, type of bridge etc.).

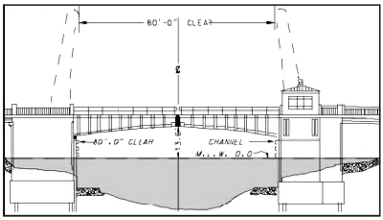


Fig. 9 - Pictures and Diagrams

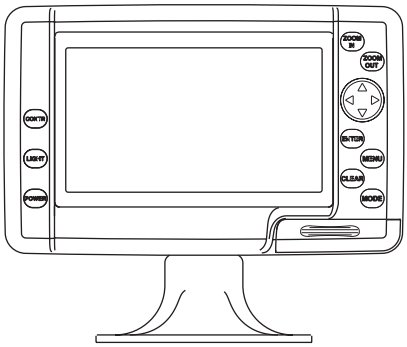
- **Port Info**
  Combination of a Port Info database containing all the relevant Safety and

Navigational information normally found in good pilot books and a presentation software which displays special Port Facility Symbols.

- **Ports & Services**
  Areas along shore with facilities for mooring, downloading and uploading of ships, generally sheltered from waves and winds. Port installations are piers, wharves, pontoons, dry docks, cranes... .
- **Route**
  Sequence of Waypoints connected by segments (Route Legs). Among the available Routes, only one is the Active Route, which is shown by a straight line and arrows to indicate the direction.
- **RTCM = Radio Technical Commission for Maritime Services**
  The data format created by the Radio Technical Commission Maritime to transmit Differential GPS corrections.
- **Scale**
  Magnitude of the reference scale expressed in the actual unit of measure and the current Map Datum.
- **SNR = Signal to Noise Ratio**
  Ratio between the magnitude of a radio signal and the magnitude of the noise (that is, the interferences). The SRN is expressed in decibels and it is associated to the GPS satellites signal quality.
- **SOG = Speed Over Ground**
  Current velocity at which the vessel is travelling, relative to a ground location. The SOG is normally provided by the GPS sensor.
- **SPD = Speed Through Water**
  Speed of the vessel relative to the water.
- **Spot Soundings**
  Depth of the water in a specific and charted position. It is represented on the map by its own value expressed in the current depth unit.
- **STR = Steering**
  Difference between COG and CTS. If COG is 25° and CTS is 30°, then STR is 5° Right.
- **Total Engine Hours**
  Total operating hours of the machine. This value is not calculated in the plotter, but read from the machine.
- **TD = Time Difference**
  Loran positions are determined by precise timing of the intervals between reception of pulses transmitted by pairs of stations in the selected chain. Between any two stations a ship must be located somewhere along a line of possible positions where the measured Time Difference, TD, between arrival of pulses from those stations would be observed. The TD is measured from the time of reception of the master station signal to the time of reception of the slave station signal (see also Pair).
- **Tide**
  Periodic rise and fall of the surface of oceans, bays, etc., due principally to the gravitational interactions between the Moon and Earth.
- **Tracks & Routes**
  Recommended and established routes for ships at sea, including traffic separation schemes, deep water routes.
- **TRN = Turning**
  The difference between COG and BRG. If COG is 80° and BRG is 75°, TRN is 5° Left.
- **TTG = Time To Go**
  Estimated time needed to reach your destination, based on your current speed and the distance to destination.

- **Turbocharger Turbine Inlet Temperature**
  Exhaust gas temperature before the turbocharger.
- **TWD = True Wind Direction**
  Direction of the Wind relative to a fixed point on the earth.
- **TWS = True Wind Speed**
  Velocity of the Wind relative to a fixed point on the earth.
- **Underwater Objects**
  Objects like obstruction, wreck, cable…
- **User Point**
  Object you place on the chart identified by its coordinates and displayed on the screen with a reference symbol (see Mark, Waypoint).
- **UTC = Universal Time Coordinated**
  Time scale based on the rotation of the earth that is used by most broadcast time services.
- **UTM = Universal Transverse Mercator**
  Metric Grid system used on most large and intermediate scale land topographic charts and maps.
- **Variation**
  Angle between the magnetic and geographic meridians at any place, expressed in degrees West or East to indicate the direction of magnetic North from true North. It changes from point to point, and (at the same point) with time.
- **VMG= Velocity Made Good**
  Destination closing Velocity. The VMG is calculated using the current speed of the vessel (SOG) and the difference between the current vessel course and the bearing to the destination.
- **VRM= Variable Range Marker**
  VRM is a circle and its radius is determined by the user. The circle's center is the ship's or cursor position.
- **WAAS = Wide Area Augmentation System**
  The Federal Aviation Administration (FAA), in cooperation with other DOT organizations and DOD, is augmenting the GPS/SPS with a satellite-based augmentation system, the WAAS. It will provide a signal-in-space to WAAS users to support en route through precision approach navigation. After achieving initial operational capability, the WAAS will then be incrementally improved over the next years to expand the area of coverage, increase the availability of precision approaches, increase signal redundancy and reduce operational restrictions.
- **Waypoint**
  Any point to which one intends to navigate. A sequence of Waypoints makes up a Route plan.
- **WGS-84 = World Geodetic System 1984**
  Coordinates System or Datum developed by the Defence Mapping Agency (DMA). It is the default geodetic Datum used by the chart plotter and the GPS.
- **Zoom-In**
  Shows more detail in a smaller area.
- **Zoom-Out**
  Operates similarly to zoom -in, but in the reverse, showing a wider but less detailed view.
- **XTE = Cross Track Error**
  Distance from the ship's present position to the closest point on a line between the origin and destinations Waypoints of the navigation.

MAP 7w & MAP 7wi Plus GPS



FEATURES & FUNCTIONS

- Direct sunlight viewable color LCD 16/9 display
- Worldwide Built-in Cartography showing C-MAP By Jeppesen detail up to 2.0 NM
- "C-MAP By Jeppesen" MAX electronic charts, object-oriented chart system with enhanced functionality including:
  - Guardian alarm, Safety toolbar, Safety route check
  - Perspective view
  - Satellite image coverage
  - Turbo and Smooth Zoom
  - Multilanguage
  - Enhanced Port information database
  - Tides & Currents data
  - Photos & Diagrams
  - Automatic information on all chart objects
  - Search function for ports, tidal information, serrvice facilities
- Positional information from GPS
- GPS Signal Status page
- Navigation Data pages
- 1000 Waypoints/Marks and 20 Routes (51 Waypoints max per Route)
- Create, Move, Insert, Edit or Erase Waypoint
- Create, Move, Edit or Erase Mark
- Automatic Info on User Points
- Navigation to Destination
- Create, Save, Name, Edit or Follow a Route
- Route Data Report and User Points (Marks/Waypoints) List pages
- Find Ports Services, Port By Name, Port By Distance, Tide Stations, Lakes By Name, Lakes Information, POIs, Wrecks, Obstructions, Coordinates
- Display vessel's position, direction and Track
- Alarms Handling
- Man OverBoard (MOB) to navigate back to a missing person or object
- Simulation Mode with cursor control
- Video Input option

TECHNICAL SPECIFICATIONS

- Operating Voltage : 10 - 35 Volt dc
- Power consumption : 11 W max
- Interface : NMEA-0183
- Autopilot Interface : NMEA-0180, NMEA-0180/CDX, NMEA-0183
- Display : Color Sunlight Viewable LCD *(active area 7")*
- Display Resolution : 800 x 480 pixels
- Cartography : C-MAP By Jeppesen C-CARD
- Operating temperature range : 0/+55°C (32/+131°F)
- Memory : Non volatile
- Keyboard : Silicon rubber, backlight
- Weight : 1,1 kg

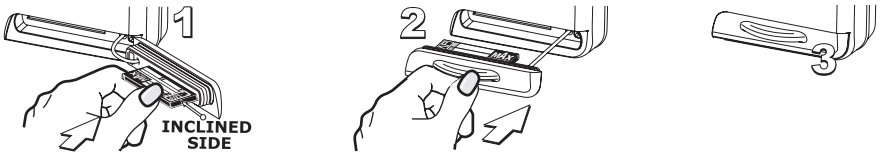
When the package containing the chart plotter is first opened, please check it for the following contents (if any parts are missing contact the dealer the chart plotter was purchased from):

- "Quick disconnect" bracket and its protective cover
- Chart plotter's protective cover
- Fuse 2 Amp. + fuseholder
- **MAP 7w Plus GPS** Flush mounting kit
- **MAP 7w Plus GPS** Smart DGPS WAAS Receiver with cable 15 mt/45 feet
- User Manual

INSERTING/REMOVING PROCEDURE

Inserting the C-CARD

Open the door, hold the C-CARD by the long side so that you can see the label and gently push the C-CARD into the door slot (1). Close the door pushing the C-CARD in as far as it will go to hold fixed into the chart plotter slot (2). When finished the door must be right closed (3).



Removing the C-CARD

To remove the C-CARD inserted in the chart plotter open the door (1). The C-CARD will eject out of the chart plotter slot remaining fixed into the door (2). Then remove the C-CARD from the slot (3).

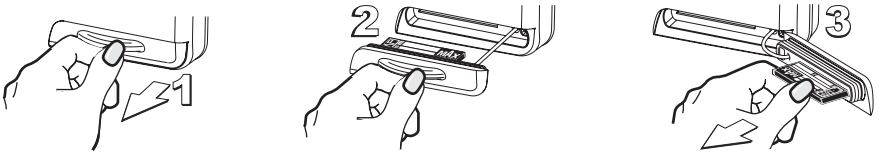
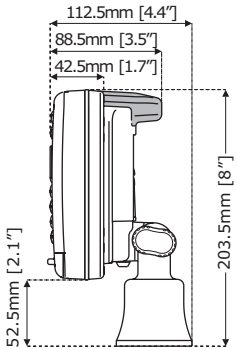
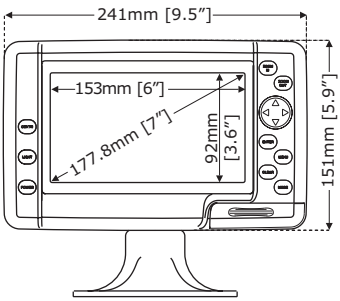


CHART PLOTTER DIMENSIONS

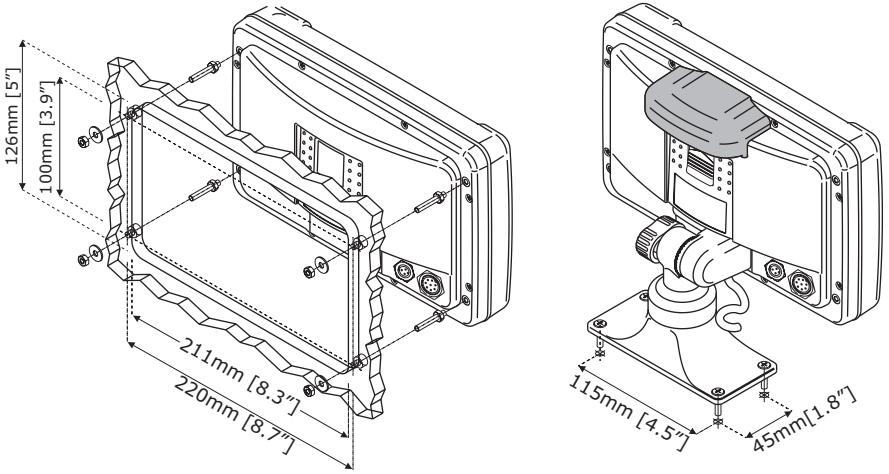


GRAY parts are present ONLY on chart plotter WITH INTERNAL GPS



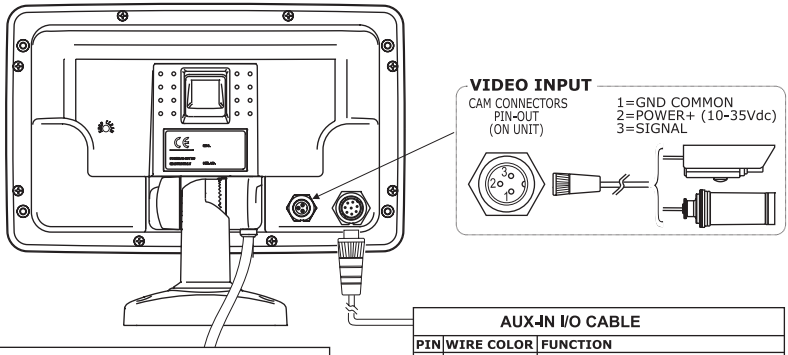
INSTALLATION AND REMOVING

GRAY parts are present ONLY on chart plotter WITH INTERNAL GPS



MAP 7w Plus GPS *flush installation and* ***MAP 7w Plus GPS/MAP 7wi Plus GPS*** *bracket installation*

EXTERNAL WIRING



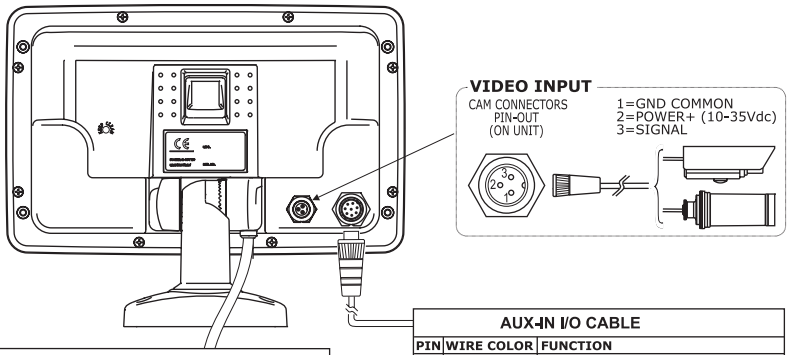
QUICK DISCONNECT BRACKET CABLE

WIRE COLOR	DESCRIPTION	FUNCTION
BLACK	GND/COMMON	POWER SUPPLY GND
RED	POWER +10-35Vdc	POWER SUPPLY+
WHITE	INPUT1+	NMEA0183/C-COM
GREEN	SIGNAL RETURN-	SIGNAL RETURN
YELLOW	OUTPUT1+	NMEA0183/180/180CDX/C-COM
BROWN	INPUT2+	NMEA0183/C-COM
GRAY	OUTPUT2+	NMEA0183/180/180CDX/C-COM
ORANGE	INPUT3+	NMEA0183/C-COM
PINK	OUTPUT3+	NMEA0183/180/180CDX/C-COM
BLUE	SIGNAL RETURN-	SIGNAL RETURN

AUX-IN I/O CABLE

PIN	WIRE COLOR	FUNCTION
1	BLACK	GND COMMON
2	RED	POWER OUTPUT+ (10-35 Vdc)
3	WHITE	INPUT 4+
4	GREEN	GND
5	GRAY	OUTPUT 5+
6	YELLOW	OUTPUT 4+
7	BROWN	INPUT 5+
8	BLUE	EXT. ALARM SIGNAL (to GND when ON)

*External Wiring for **MAP 7w Plus GPS***



QUICK DISCONNECT BRACKET CABLE

WIRE COLOR	DESCRIPTION	FUNCTION
BLACK	GND/COMMON	POWER SUPPLY GND
RED	POWER +10-35Vdc	POWER SUPPLY+
WHITE	INPUT1+	NMEA0183/C-COM
GREEN	SIGNAL RETURN-	SIGNAL RETURN
YELLOW	OUTPUT1+	NMEA0183/180/180CDX/C-COM
BROWN	INPUT2+	NMEA0183/C-COM
GRAY	OUTPUT2+	NMEA0183/180/180CDX/C-COM
ORANGE	NC	
PINK	NC	
BLUE	SIGNAL RETURN-	SIGNAL RETURN

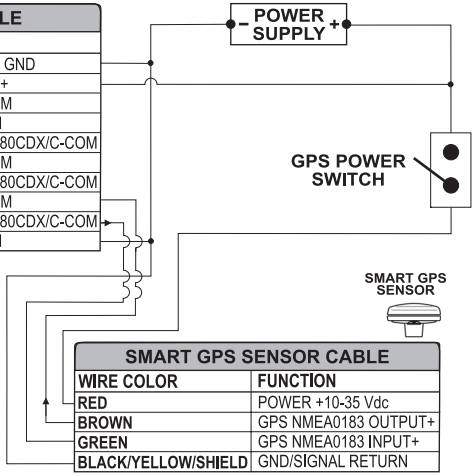
AUX-IN I/O CABLE

PIN	WIRE COLOR	FUNCTION
1	BLACK	GND COMMON
2	RED	POWER OUTPUT+ (10-35 Vdc)
3	WHITE	INPUT 4+
4	GREEN	GND
5	GRAY	OUTPUT 5+
6	YELLOW	OUTPUT 4+
7	BROWN	INPUT 5+
8	BLUE	EXT. ALARM SIGNAL (to GND when ON)

*External Wiring for **MAP 7wi Plus GPS***

TYPICAL CONNECTIONS

QUICK DISCONNECT BRACKET CABLE		
WIRE COLOR	**DESCRIPTION**	**FUNCTION**
BLACK	GND/COMMON	POWER SUPPLY GND
RED	POWER +10-35Vdc	POWER SUPPLY+
WHITE	INPUT1+	NMEA0183/C-COM
GREEN	SIGNAL RETURN-	SIGNAL RETURN
YELLOW	OUTPUT1+	NMEA0183/180/180CDX/C-COM
BROWN	INPUT2+	NMEA0183/C-COM
GRAY	OUTPUT2+	NMEA0183/180/180CDX/C-COM
ORANGE	INPUT3+	NMEA0183/C-COM
PINK	OUTPUT3+	NMEA0183/180/180CDX/C-COM
BLUE	SIGNAL RETURN-	SIGNAL RETURN



SMART GPS SENSOR CABLE	
WIRE COLOR	**FUNCTION**
RED	POWER +10-35 Vdc
BROWN	GPS NMEA0183 OUTPUT+
GREEN	GPS NMEA0183 INPUT+
BLACK/YELLOW/SHIELD	GND/SIGNAL RETURN

*GPS Connection on Port 3 for **MAP 7w Plus GPS***

QUICK DISCONNECT BRACKET CABLE		
WIRE COLOR	**DESCRIPTION**	**FUNCTION**
BLACK	POWER GND	POWER SUPPLY GND
RED	POWER +10-35Vdc	POWER SUPPLY+
WHITE	INPUT1+	NMEA0183/C-COM
GREEN	SIGNAL RETURN-	SIGNAL RETURN
YELLOW	OUTPUT1+	NMEA0183/180/180CDX/C-COM
BROWN	INPUT2+	NMEA0183/C-COM
GRAY	OUTPUT2+	NMEA0183/180/180CDX/C-COM
ORANGE	INPUT3+	NMEA0183/C-COM
PINK	OUTPUT3+	NMEA0183/180/180CDX/C-COM
BLUE	SIGNAL RETURN-	SIGNAL RETURN

AUTOPILOT DEVICE
FUNCTION
NMEA0183/180/180CDX/INPUT+
SIGNAL RETURN

Autopilot Connection on Port 2

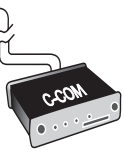
QUICK DISCONNECT BRACKET CABLE		
WIRE COLOR	**DESCRIPTION**	**FUNCTION**
BLACK	POWER GND	POWER SUPPLY GND
RED	POWER +10-35Vdc	POWER SUPPLY+
WHITE	INPUT1+	NMEA0183/C-COM
GREEN	SIGNAL RETURN-	SIGNAL RETURN
YELLOW	OUTPUT1+	NMEA0183/180/180CDX/C-COM
BROWN	INPUT2+	NMEA0183/C-COM
GRAY	OUTPUT2+	NMEA0183/180/180CDX/C-COM
ORANGE	INPUT3+	NMEA0183/C-COM
PINK	OUTPUT3+	NMEA0183/180/180CDX/C-COM
BLUE	SIGNAL RETURN-	SIGNAL RETURN

NMEA0183 DEVICE
FUNCTION
NMEA0183 OUTPUT+
NMEA0183 INPUT+
SIGNAL RETURN

External NMEA Connection on Port 1

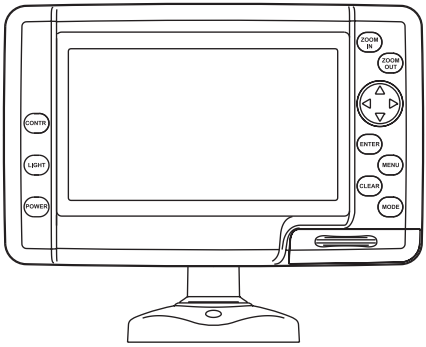
QUICK DISCONNECT BRACKET CABLE		
WIRE COLOR	**DESCRIPTION**	**FUNCTION**
BLACK	POWER GND	POWER SUPPLY GND
RED	POWER +10-35Vdc	POWER SUPPLY+
WHITE	INPUT 1+	C-COM
GREEN	SIGNAL RETURN-	SIGNAL RETURN
YELLOW	OUTPUT 1+	C-COM

C-COM GSM Plus CABLE	
WIRE COLOR	**FUNCTION**
BLACK	GND
RED	POWER SUPPLY+
WHITE	C-COM TX+
GREEN	C-COM TX-
YELLOW	C-COM RX+



C-COM Connection on Port 1

MAP 7cwi Plus GPS



FEATURES & FUNCTIONS

- Direct sunlight viewable color LCD 16/9 display
- Worldwide Built-in Cartography showing C-MAP By Jeppesen detail up to 2.0 NM
- "C-MAP By Jeppesen" MAX electronic charts, object-oriented chart system with enhanced functionality including:
  - Guardian alarm, Safety toolbar, Safety route check
  - Perspective view
  - Satellite image coverage
  - Turbo and Smooth Zoom
  - Multilanguage
  - Enhanced Port information database
  - Tides & Currents data
  - Photos & Diagrams
  - Automatic information on all chart objects
  - Search function for ports, tidal information, serrvice facilities
- Positional information from GPS
- GPS Signal Status page
- Navigation Data pages
- 1000 Waypoints/Marks and 20 Routes (51 Waypoints max per Route)
- Create, Move, Insert, Edit or Erase Waypoint
- Create, Move, Edit or Erase Mark
- Automatic Info on User Points
- Navigation to Destination
- Create, Save, Name, Edit or Follow a Route
- Route Data Report and User Points (Marks/Waypoints) List pages
- Find Ports Services, Port By Name, Port By Distance, Tide Stations, Lakes By Name, Lakes Information, POIs, Wrecks, Obstructions, Coordinates
- Display vessel's position, direction and Track
- Alarms Handling
- Man OverBoard (MOB) to navigate back to a missing person or object
- Simulation Mode with cursor control
- Video Input option
- Internal Fish Finder

TECHNICAL SPECIFICATIONS

- Operating Voltage : 10 - 35 Volt dc
- Power consumption : 12W average; 27W max peak
- Interface : NMEA-0183
- Autopilot Interface : NMEA-0180, NMEA-0180/CDX, NMEA-0183
- Display : Color Sunlight Viewable LCD *(active area 7")*
- Display Resolution : 800 x 480 pixels
- Cartography : C-MAP By Jeppesen C-CARD
- Operating temperature range : 0/+55°C (32/+131°F)
- Memory : Non volatile
- Keyboard : Silicon rubber, backlight
- Weight : 1,3 kg

FF MODULE 600W-50-200KHZ TECHNICAL SPECIFICATIONS

- Power Output : 600W (4800Wpp), 50/200KHz Dual Frequency
- Max Depth : 213m (700Ft) at 200kHz, 457m(1500Ft) at 50kHz
- Automatic Recognition of the AIRMAR "X-DUCER ID" transducers for best performance
- Advanced Digital Signal Processing
- Speed & Temperature Sensor (if available on transducer)
- Alarms (shallow water, depth, Fish, temp)
- Trip Log, Fish Symbols
- STC, Interference Rejection, Automatic noise reduction
- A-scope, White Line, Zoom x2/x4
- Auto range/gain/frequency/shift/ping rate

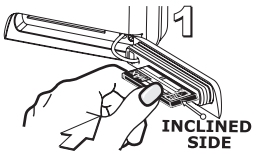
When the package containing the chart plotter is first opened, please check it for the following contents (if any parts are missing contact the dealer the chart plotter was purchased from):

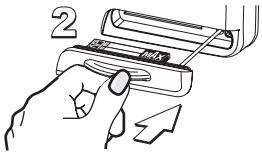
- "Quick disconnect" bracket and its protective cover
- Chart plotter's protective cover
- Fuse 3.15 Amp. + fuseholder
- User Manual

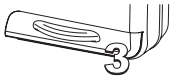
INSERTING/REMOVING PROCEDURE

Inserting the C-CARD

Open the door, hold the C-CARD by the long side so that you can see the label and gently push the C-CARD into the door slot (1). Close the door pushing the C-CARD in as far as it will go to hold fixed into the chart plotter slot (2). When finished the door must be right closed (3).







Removing the C-CARD

To remove the C-CARD inserted in the chart plotter open the door (1). The C-CARD will eject out of the chart plotter slot remaining fixed into the door (2). Then remove the C-CARD from the slot (3).

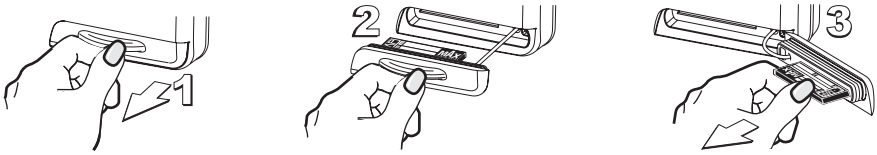
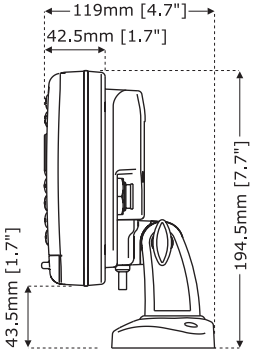
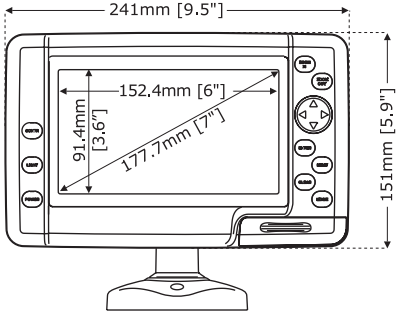
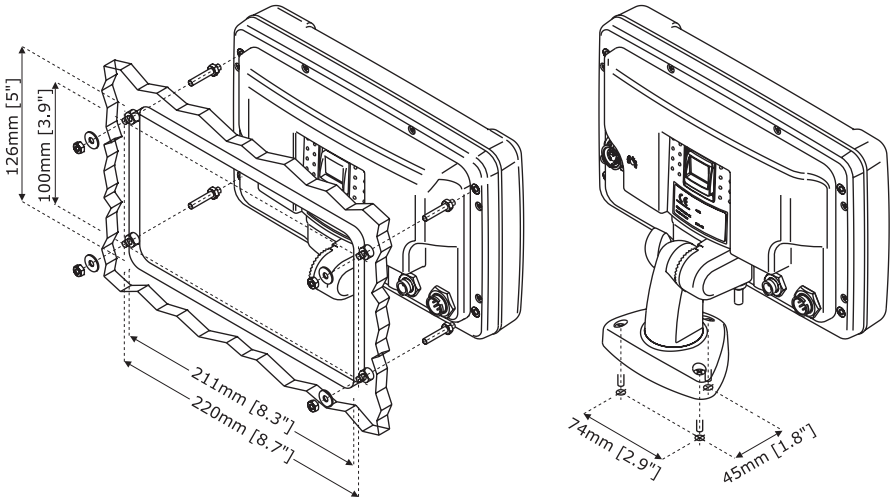


CHART PLOTTER DIMENSIONS

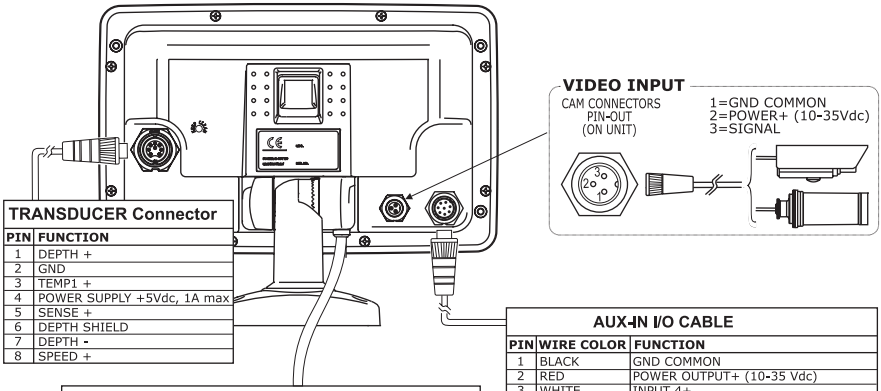




INSTALLATION AND REMOVING



EXTERNAL WIRING



TRANSDUCER Connector

PIN	FUNCTION
1	DEPTH +
2	GND
3	TEMP1 +
4	POWER SUPPLY +5Vdc, 1A max
5	SENSE +
6	DEPTH SHIELD
7	DEPTH -
8	SPEED +

AUX-IN I/O CABLE

PIN	WIRE COLOR	FUNCTION
1	BLACK	GND COMMON
2	RED	POWER OUTPUT+ (10-35 Vdc)
3	WHITE	INPUT 4+
4	GREEN	GND
5	GRAY	OUTPUT 5+
6	YELLOW	OUTPUT 4+
7	BROWN	INPUT 5+
8	BLUE	EXT. ALARM SIGNAL (to GND when ON)

QUICK DISCONNECT BRACKET CABLE

WIRE COLOR	DESCRIPTION	FUNCTION
BLACK	GND/COMMON	POWER SUPPLY GND
RED	POWER +10-35Vdc	POWER SUPPLY+
WHITE	INPUT1+	NMEA0183/C-COM
GREEN	SIGNAL RETURN-	SIGNAL RETURN
YELLOW	OUTPUT1+	NMEA0183/180/180CDX/C-COM
BROWN	NC	
GRAY	NC	
ORANGE	NC	
PINK	NC	
BLUE	SIGNAL RETURN-	SIGNAL RETURN

TYPICAL CONNECTIONS

QUICK DISCONNECT BRACKET CABLE

WIRE COLOR	DESCRIPTION	FUNCTION
BLACK	POWER GND	POWER SUPPLY GND
RED	POWER +10-35Vdc	POWER SUPPLY+
WHITE	INPUT1+	NMEA0183/C-COM
GREEN	SIGNAL RETURN-	SIGNAL RETURN
YELLOW	OUTPUT1+	NMEA0183/180/180CDX/C-COM
BROWN	NC	
GRAY	NC	
ORANGE	NC	
PINK	NC	
BLUE	SIGNAL RETURN-	SIGNAL RETURN

AUTOPILOT DEVICE

FUNCTION
NMEA0183/180/180CDX/INPUT+
SIGNAL RETURN

Autopilot Connection on Port 1

QUICK DISCONNECT BRACKET CABLE

WIRE COLOR	DESCRIPTION	FUNCTION
BLACK	POWER GND	POWER SUPPLY GND
RED	POWER +10-35Vdc	POWER SUPPLY+
WHITE	INPUT1+	NMEA0183/C-COM
GREEN	SIGNAL RETURN-	SIGNAL RETURN
YELLOW	OUTPUT1+	NMEA0183/180/180CDX/C-COM
BROWN	NC	
GRAY	NC	
ORANGE	NC	
PINK	NC	
BLUE	SIGNAL RETURN-	SIGNAL RETURN

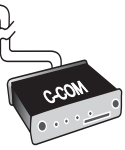
NMEA0183 DEVICE

FUNCTION
NMEA0183 OUTPUT+
NMEA0183 INPUT+
SIGNAL RETURN

External NMEA Connection on Port 1

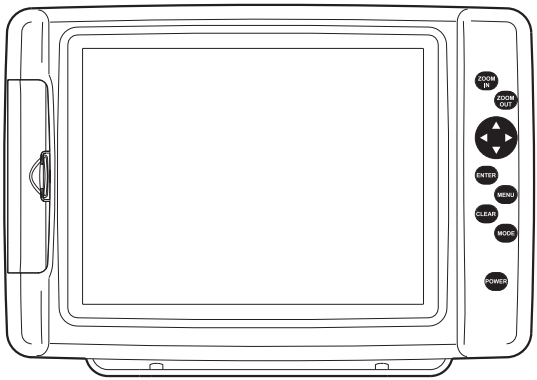
QUICK DISCONNECT BRACKET CABLE		
WIRE COLOR	**DESCRIPTION**	**FUNCTION**
BLACK	POWER GND	POWER SUPPLY GND
RED	POWER +10-35Vdc	POWER SUPPLY+
WHITE	INPUT 1+	C-COM
GREEN	SIGNAL RETURN-	SIGNAL RETURN
YELLOW	OUTPUT 1+	C-COM

C-COM GSM Plus CABLE	
WIRE COLOR	**FUNCTION**
BLACK	GND
RED	POWER SUPPLY+
WHITE	C-COM TX+
GREEN	C-COM TX-
YELLOW	C-COM RX+



C-COM Connection on Port 1

MAP 11csE Plus GPS



FEATURES & FUNCTIONS

- Direct sunlight viewable color 11" LCD display
- Worldwide Built-in Cartography showing C-MAP By Jeppesen detail up to 2.0 NM
- "C-MAP By Jeppesen" MAX electronic charts, object-oriented chart system with enhanced functionality including:
  - Guardian alarm, Safety toolbar, Safety route check
  - Perspective view
  - Satellite image coverage
  - Turbo and Smooth Zoom
  - Multilanguage
  - Enhanced Port information database
  - Tides & Currents data
  - Photos & Diagrams
  - Automatic information on all chart objects
  - Search function for ports, tidal information, serrvice facilities
- Positional information from GPS
- GPS Signal Status page
- Navigation Data pages
- 1000 Waypoints/Marks and 20 Routes (51 Waypoints max per Route)
- Create, Move, Insert, Edit or Erase Waypoint
- Create, Move, Edit or Erase Mark
- Automatic Info on User Points
- Navigation to Destination
- Create, Save, Name, Edit or Follow a Route
- Route Data Report and User Points (Marks/Waypoints) List pages
- Find Ports Services, Port By Name, Port By Distance, Tide Stations, Lakes By Name, Lakes Information, POIs, Wrecks, Obstructions, Coordinates
- Display vessel's position, direction and Track
- Alarms Handling
- Man OverBoard (MOB) to navigate back to a missing person or object
- Simulation Mode with cursor control

- Video Input option
- Video Output option
- Shows the most important engine data. It is connected to the engine electronic system of up to two machines through two CAN bus inputs and receives engine data. The display unit also has two bus outputs to transfer data to VDO Easy Link Indicators. A maximum of 20 Easy Link indicators can be connected per output.

TECHNICAL SPECIFICATIONS

- Power consumption : 1.3A max @ 12V
- Power consumption : 1.5A max @ 12V (with camera connected)
- Interface : NMEA-0183
- Autopilot Interface : NMEA-0180, NMEA-0180/CDX, NMEA-0183
- Engine Interface : CAN 2.0B Input for 2 Engines supporting SAE J1939
- Gauge Interface : 2 x Easy Link Output for analogue Engine Slave Instruments
- Display : TFT transmissive LCD *(active area 10.4")*
- Display Resolution : 800 x 600 pixels
- Video Input : PAL or NTSC video signals automatically selected
- Video Output : VGA compatible (optional adapter cable)
- Cartography : C-MAP By Jeppesen C-CARD
- Operating temperature range : 0/+55°C (32/+131°F)
- Memory : Non volatile
- Keyboard : Silicon rubber, backlight
- Weight : 1,6 Kg

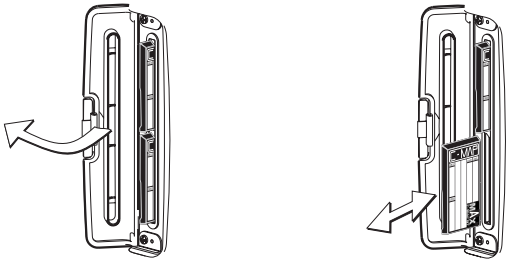
When the package containing the chart plotter is first opened, please check it for the following contents (if any parts are missing contact the dealer the chart plotter was purchased from):

- External bracket and I/O cable 1,5 mt/5,9 feet
- Video Input cable (2 pcs)
- Video Output cable
- Engine cable 1,5 mt/5,9 feet
- Chart plotter's protective cover
- Fuse 2 Amp. + fuseholder
- Flush mounting kit
- Smart DGPS WAAS Receiver with cable 15 mt/45 feet
- User Manual

INSERTING/REMOVING PROCEDURE

Inserting the C-CARD

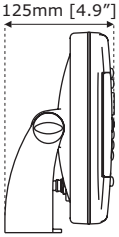
Hold the C-CARD by the short inclined side so that you can see the C-MAP By Jeppesen label. Open the door (see left side of the following picture), gently push the C-CARD into one of the two slots; push the C-CARD in as far as it will go, then close the door to hold fixed into the slot.

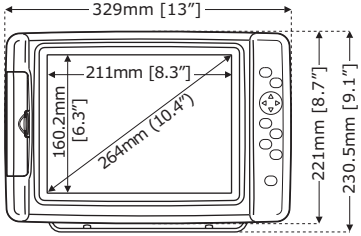


Removing the C-CARD

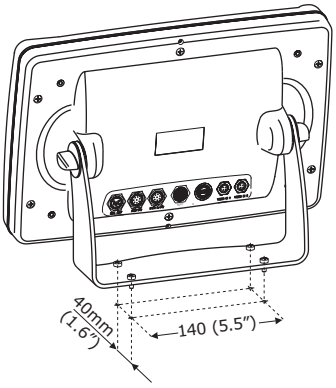
Open the door and remove the C-CARD out of one of the two slots (as shown in the right side of the previous picture).

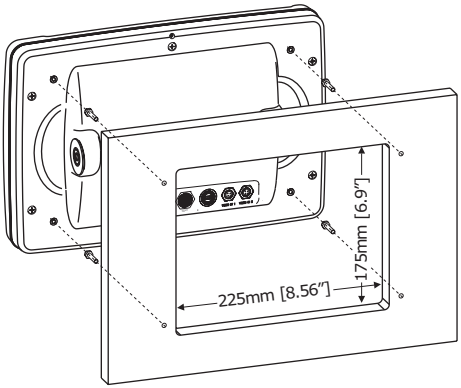
CHART PLOTTER DIMENSIONS



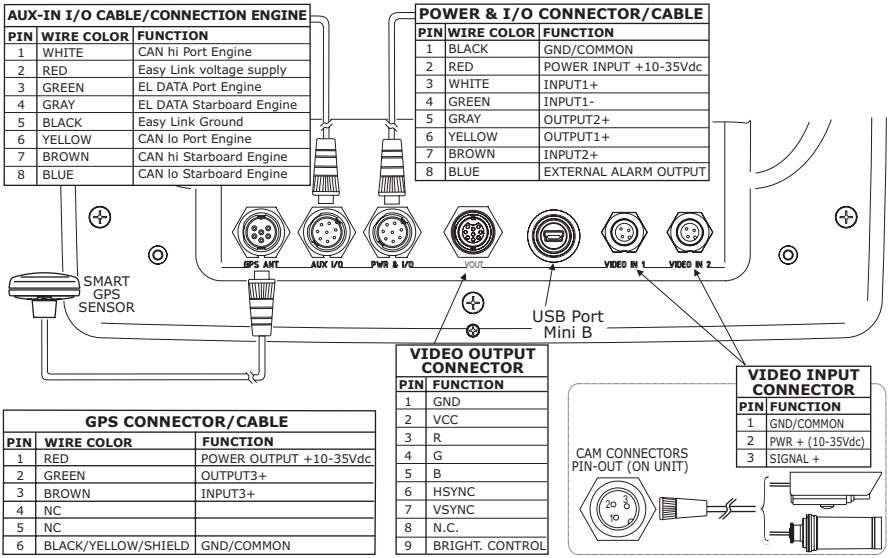


INSTALLATION AND REMOVING





EXTERNAL WIRING



AUX-IN I/O CABLE/CONNECTION ENGINE		
PIN	WIRE COLOR	FUNCTION
1	WHITE	CAN hi Port Engine
2	RED	Easy Link voltage supply
3	GREEN	EL DATA Port Engine
4	GRAY	EL DATA Starboard Engine
5	BLACK	Easy Link Ground
6	YELLOW	CAN lo Port Engine
7	BROWN	CAN hi Starboard Engine
8	BLUE	CAN lo Starboard Engine

POWER & I/O CONNECTOR/CABLE		
PIN	WIRE COLOR	FUNCTION
1	BLACK	GND/COMMON
2	RED	POWER INPUT +10-35Vdc
3	WHITE	INPUT1+
4	GREEN	INPUT1-
5	GRAY	OUTPUT2+
6	YELLOW	OUTPUT1+
7	BROWN	INPUT2+
8	BLUE	EXTERNAL ALARM OUTPUT

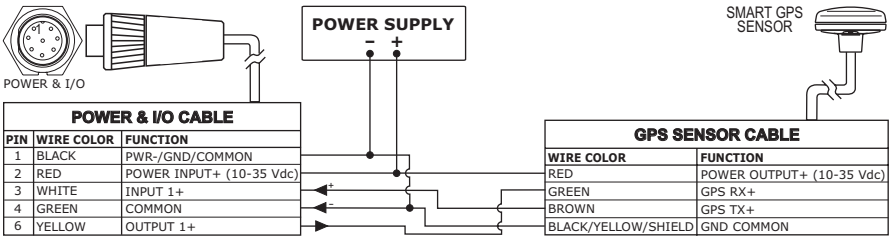
GPS CONNECTOR/CABLE		
PIN	WIRE COLOR	FUNCTION
1	RED	POWER OUTPUT +10-35Vdc
2	GREEN	OUTPUT3+
3	BROWN	INPUT3+
4	NC	
5	NC	
6	BLACK/YELLOW/SHIELD	GND/COMMON

VIDEO OUTPUT CONNECTOR	
PIN	FUNCTION
1	GND
2	VCC
3	R
4	G
5	B
6	HSYNC
7	VSYNC
8	N.C.
9	BRIGHT. CONTROL

VIDEO INPUT CONNECTOR	
PIN	FUNCTION
1	GND/COMMON
2	PWR + (10-35Vdc)
3	SIGNAL +

TYPICAL CONNECTIONS

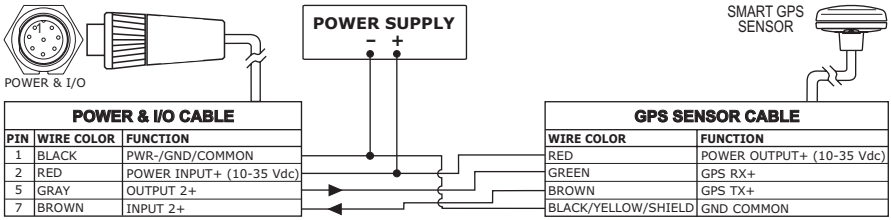
GPS Connection



POWER & I/O CABLE		
PIN	WIRE COLOR	FUNCTION
1	BLACK	PWR-/GND/COMMON
2	RED	POWER INPUT+ (10-35 Vdc)
3	WHITE	INPUT 1+
4	GREEN	COMMON
6	YELLOW	OUTPUT 1+

GPS SENSOR CABLE	
WIRE COLOR	FUNCTION
RED	POWER OUTPUT+ (10-35 Vdc)
GREEN	GPS RX+
BROWN	GPS TX+
BLACK/YELLOW/SHIELD	GND COMMON

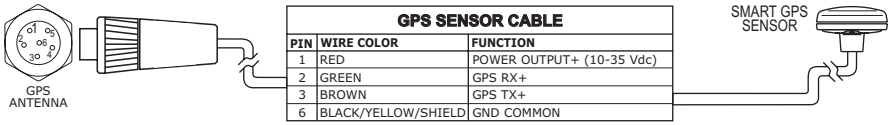
GPS on Port 1



POWER & I/O CABLE		
PIN	WIRE COLOR	FUNCTION
1	BLACK	PWR-/GND/COMMON
2	RED	POWER INPUT+ (10-35 Vdc)
5	GRAY	OUTPUT 2+
7	BROWN	INPUT 2+

GPS SENSOR CABLE	
WIRE COLOR	FUNCTION
RED	POWER OUTPUT+ (10-35 Vdc)
GREEN	GPS RX+
BROWN	GPS TX+
BLACK/YELLOW/SHIELD	GND COMMON

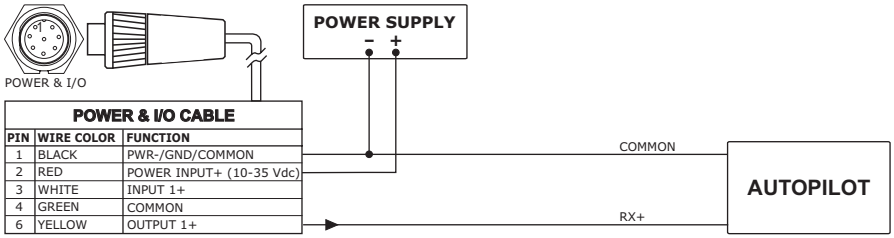
GPS on Port 2



GPS SENSOR CABLE		
PIN	WIRE COLOR	FUNCTION
1	RED	POWER OUTPUT+ (10-35 Vdc)
2	GREEN	GPS RX+
3	BROWN	GPS TX+
6	BLACK/YELLOW/SHIELD	GND COMMON

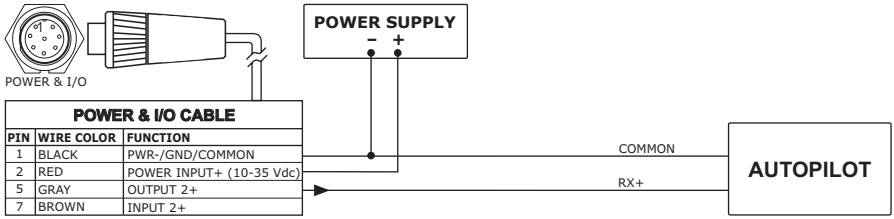
GPS on Port 3

Autopilot Connection



POWER & I/O CABLE		
PIN	WIRE COLOR	FUNCTION
1	BLACK	PWR-/GND/COMMON
2	RED	POWER INPUT+ (10-35 Vdc)
3	WHITE	INPUT 1+
4	GREEN	COMMON
6	YELLOW	OUTPUT 1+

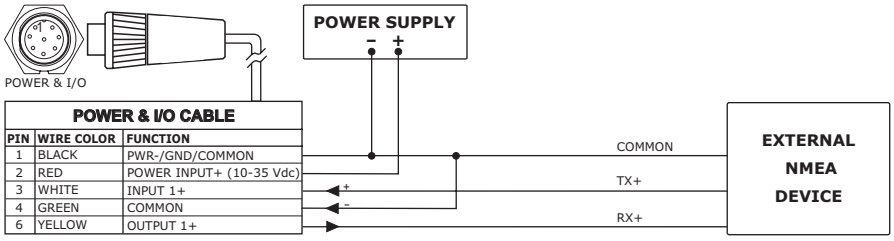
Autopilot on Port 1



POWER & I/O CABLE		
PIN	WIRE COLOR	FUNCTION
1	BLACK	PWR-/GND/COMMON
2	RED	POWER INPUT+ (10-35 Vdc)
5	GRAY	OUTPUT 2+
7	BROWN	INPUT 2+

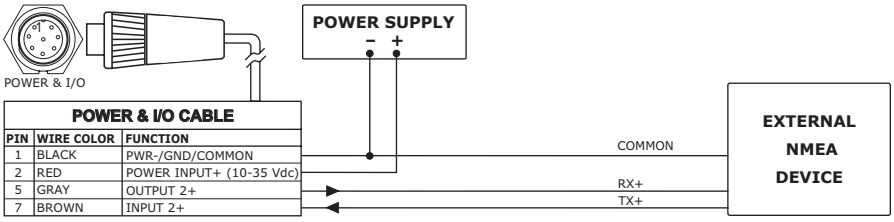
Autopilot on Port 2

External NMEA Connection



POWER & I/O CABLE		
PIN	WIRE COLOR	FUNCTION
1	BLACK	PWR-/GND/COMMON
2	RED	POWER INPUT+ (10-35 Vdc)
3	WHITE	INPUT 1+
4	GREEN	COMMON
6	YELLOW	OUTPUT 1+

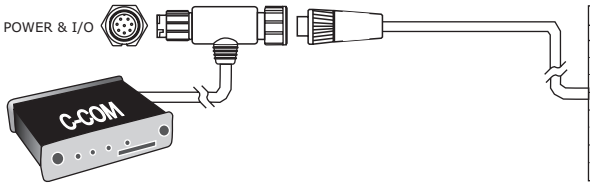
External NMEA on Port 1



POWER & I/O CABLE		
PIN	WIRE COLOR	FUNCTION
1	BLACK	PWR-/GND/COMMON
2	RED	POWER INPUT+ (10-35 Vdc)
5	GRAY	OUTPUT 2+
7	BROWN	INPUT 2+

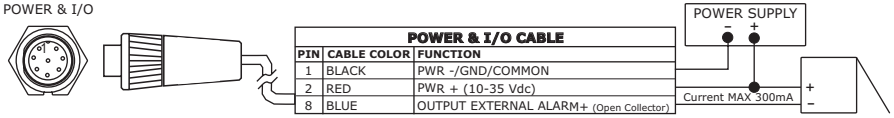
External NMEA on Port 2

C-COM Connection



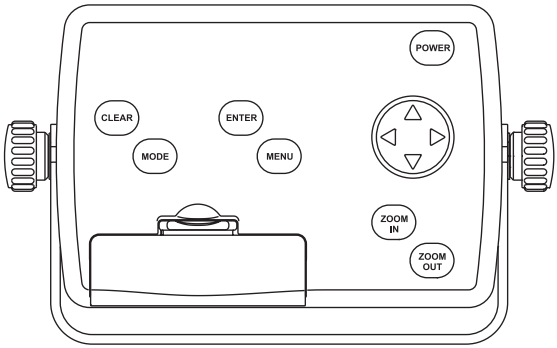
POWER & I/O CONNECTOR		
PIN	CABLE COLOR	FUNCTION
1	BLACK	PWR-/GND/COMMON
2	RED	PWR+ (10-35 Vdc)
3	WHITE	Used by C-COM
4	GREEN	Used by C-COM
5	GRAY	OUTPUT2+
6	YELLOW	Used by C-COM
7	BROWN	INPUT2+
8	BLUE	OUTPUT EXTERNAL ALARM+

External Alarm Connection



POWER & I/O CABLE		
PIN	CABLE COLOR	FUNCTION
1	BLACK	PWR -/GND/COMMON
2	RED	PWR + (10-35 Vdc)
8	BLUE	OUTPUT EXTERNAL ALARM+ (Open Collector)

MAP cx Plus GPS



FEATURES & FUNCTIONS

- Worldwide Built-in Cartography showing C-MAP By Jeppesen detail up to 2.0 NM
- "C-MAP By Jeppesen" MAX electronic charts, object-oriented chart system with enhanced functionality including:
  - Guardian alarm, Safety toolbar, Safety route check
  - Perspective view
  - Satellite image coverage
  - Turbo and Smooth Zoom
  - Multilanguage
  - Enhanced Port information database
  - Tides & Currents data
  - Photos & Diagrams
  - Automatic information on all chart objects
  - Search function for ports, tidal information, serrvice facilities
- Positional information from GPS
- GPS Signal Status page
- Navigation Data pages
- 1000 Waypoints/Marks and 20 Routes (51 Waypoints max per Route)
- Create, Move, Insert, Edit or Erase Waypoint
- Create, Move, Edit or Erase Mark
- Navigation to Destination
- Create, Save, Name, Edit or Follow a Route
- Automatic Info on User Points
- Route Data Report and User Points (Marks/Waypoints) List pages
- Find Ports Services, Port By Name, Port By Distance, Tide Stations, Lakes By Name, Lakes Information, POIs, Wrecks, Obstructions, Coordinates
- Display vessel's position, direction and Track
- Alarms Handling
- Man OverBoard (MOB) to navigate back to a missing person or object
- Simulation Mode with cursor control
- Video Output option

TECHNICAL SPECIFICATIONS

- Power consumption : 0.25 A max, @ 12 V
- Interface : NMEA0183
- Autopilot Interface : NMEA-0180, NMEA-0180/CDX, NMEA-0183
- Video Output : VGA compatible
- Display Resolution : 640x480 or 800x600 or 1024x768 pixels user selectable
- Cartography : C-MAP By Jeppesen C-CARD
- Operating temperature range : 32/131 °F (0/+55 °C)
- Memory : Non volatile with battery backup
- Keyboard : Silicon rubber, backlight
- Weight : 950 gr.

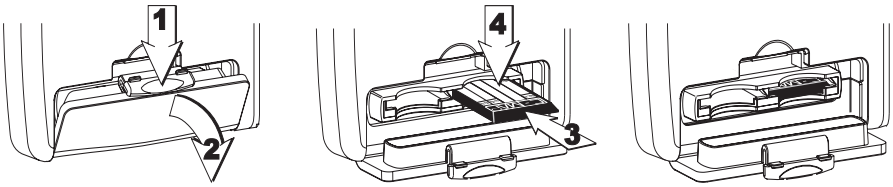
When the package containing the controller is opened for the first time after purchase, please make sure that the following contents are present (if any item is missing, please contact your local dealer):

- External bracket
- Power supply and I/O (CBC0FS0804) I/O, cable CBC0FS0603
- AUX IN I/O cable 1,5 mt/5.9 feet
- Video Output cable
- Fuse 1A (2 pcs) + cable fuse holder (2 pcs)
- User Manual

INSERTING/REMOVING PROCEDURE

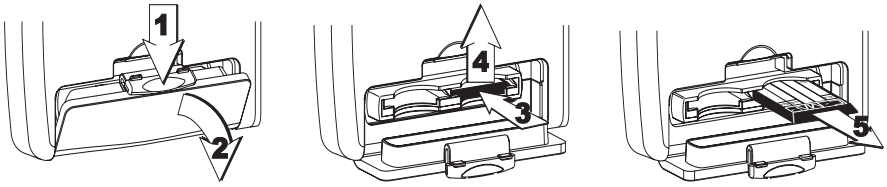
Inserting the C-CARD

Hold the C-CARD by the short inclined side so that you can see the C-MAP By Jeppesen label. Open the C-CARD slot's door pressing (1) to the bottom (2). Gently push the C-CARD into one of the two slots; push the C-CARD in as far as it will go (3), then move it to the bottom (4) to hold fixed into the slot.

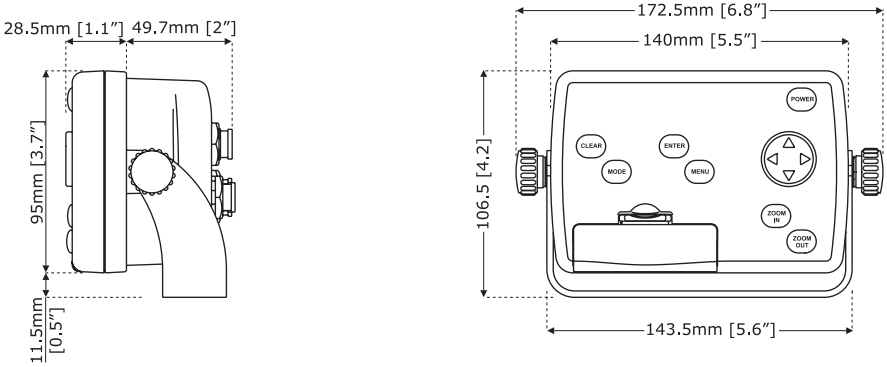


Removing the C-CARD

Open the C-CARD slot's door pressing (1) to the bottom (2). Press lightly (3) the C-CARD you wish to remove and move it to the top (4) until you hear a click: the C-CARD will eject out of the slot (5).



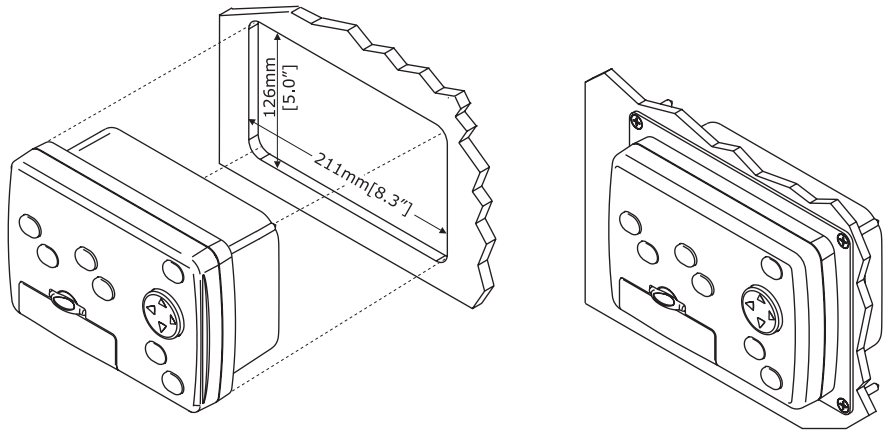
CONTROLLER DIMENSIONS



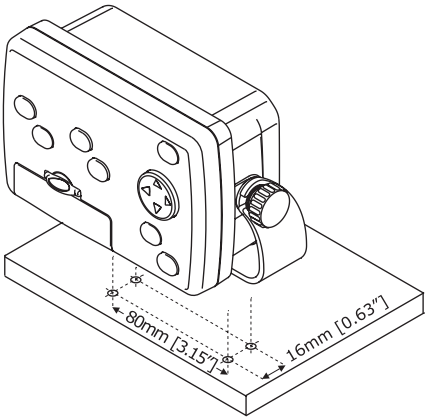
INSTALLATION AND REMOVING

WARNING

In order to protect the chart plotter video board, please make sure that the power cables of the monitor and of the chart plotter are physically separated, with protection against electrical discharge.



Flush installation



Bracket installation

EXTERNAL WIRING

AUX-IN I/O CONNECTOR/CABLE

PIN	WIRE COLOR	FUNCTION
1	BLACK	GND/COMMON
2	RED	POWER OUTPUT+ (10-35 Vdc)
3	WHITE	INPUT 4+
4	GREEN	GND
5	GRAY	OUTPUT 5+
6	YELLOW	OUTPUT 4+
7	BROWN	INPUT 5+
8	BLUE	EXTERNAL ALARM OUTPUT+

VIDEO OUTPUT CONNECTOR

PIN	FUNCTION
1	GND
2	VCC
3	R
4	G
5	B
6	HSYNC
7	VSYNC
8	N.C.
9	BRIGHTNESS CONTROL

SMART GPS SENSOR

POWER & I/O CONNECTOR/CABLE

PIN	WIRE COLOR	FUNCTION
1	BLACK	GND/COMMON
2	RED	POWER INPUT+ (10-35 Vdc)
3	WHITE	INPUT 1+
4	GREEN	GND
5	GRAY	OUTPUT 2+
6	YELLOW	OUTPUT 1+
7	BROWN	INPUT 2+
8	BLUE	EXTERNAL ALARM OUTPUT+

GPS CONNECTOR/CABLE

PIN	WIRE COLOR	FUNCTION
1	RED	POWER OUTPUT+ (10-35 Vdc)
2	GREEN	OUTPUT 3+
3	BROWN	INPUT 3+
4	NC	
5	NC	
6	BLACK/YELLOW/SHIELD	GND/SIGNAL RETURN

FUSE 1A

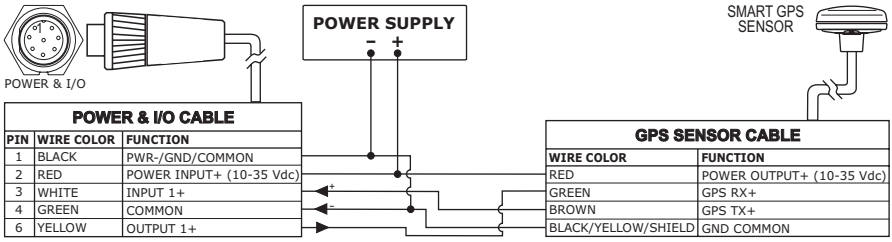
FUSE 1A

\+ POWER SUPPLY -

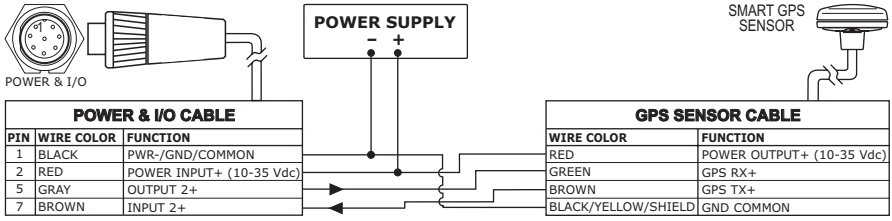
NOTE:
Add in series to power cord (both Red and black wire) a 1A Fuse (supplied).

TYPICAL CONNECTIONS

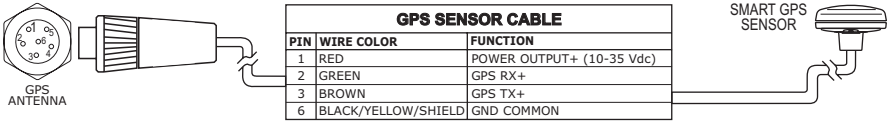
GPS Connection


POWER & I/O
POWER SUPPLY
– +
SMART GPS SENSOR
POWER & I/O CABLE
PIN | WIRE COLOR | FUNCTION
1 | BLACK | PWR-/GND/COMMON
2 | RED | POWER INPUT+ (10-35 Vdc)
3 | WHITE | INPUT 1+
4 | GREEN | COMMON
6 | YELLOW | OUTPUT 1+
GPS SENSOR CABLE
WIRE COLOR | FUNCTION
RED | POWER OUTPUT+ (10-35 Vdc)
GREEN | GPS RX+
BROWN | GPS TX+
BLACK/YELLOW/SHIELD | GND COMMON

GPS on Port 1

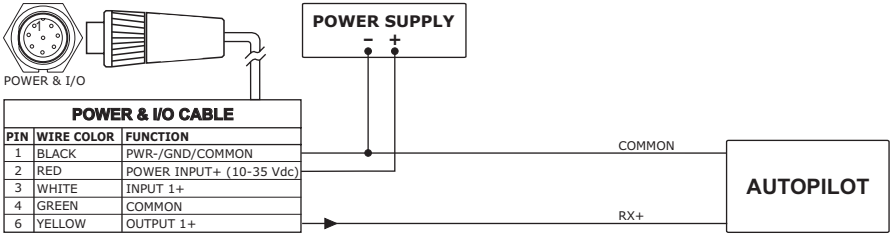

POWER & I/O
POWER SUPPLY
– +
SMART GPS SENSOR
POWER & I/O CABLE
PIN | WIRE COLOR | FUNCTION
1 | BLACK | PWR-/GND/COMMON
2 | RED | POWER INPUT+ (10-35 Vdc)
5 | GRAY | OUTPUT 2+
7 | BROWN | INPUT 2+
GPS SENSOR CABLE
WIRE COLOR | FUNCTION
RED | POWER OUTPUT+ (10-35 Vdc)
GREEN | GPS RX+
BROWN | GPS TX+
BLACK/YELLOW/SHIELD | GND COMMON

GPS on Port 2

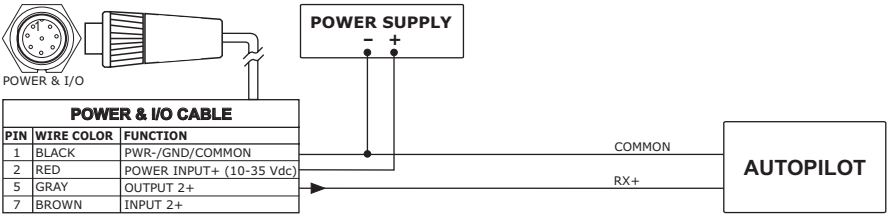

GPS ANTENNA
GPS SENSOR CABLE
PIN | WIRE COLOR | FUNCTION
1 | RED | POWER OUTPUT+ (10-35 Vdc)
2 | GREEN | GPS RX+
3 | BROWN | GPS TX+
6 | BLACK/YELLOW/SHIELD | GND COMMON
SMART GPS SENSOR

GPS on Port 3

Autopilot Connection

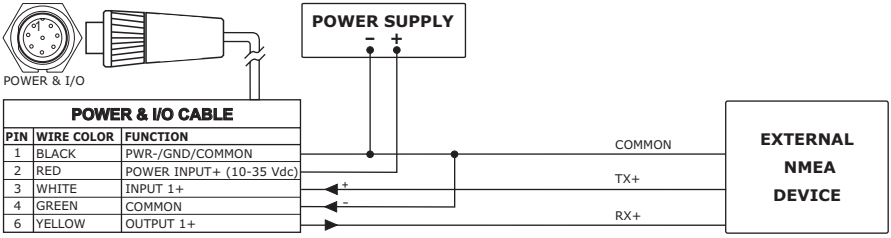


Autopilot on Port 1

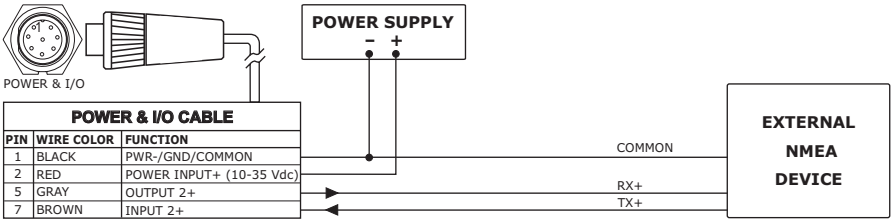


Autopilot on Port 2

External NMEA Connection

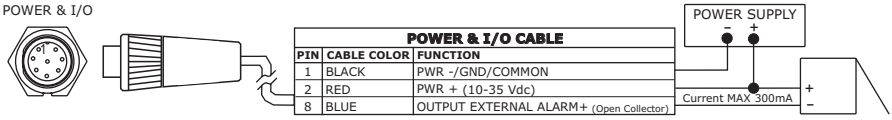


External NMEA on Port 1



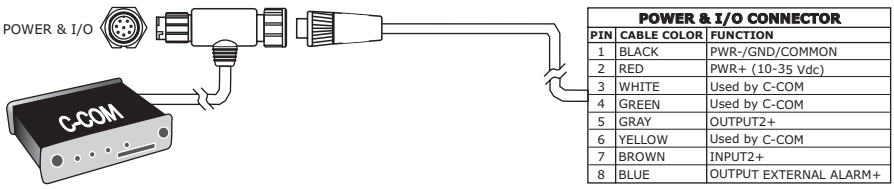
External NMEA on Port 2

External Alarm Connection



External Alarm Connection

C-COM GSM PLUS Connection



C-COM Connection

Specification of CAN Interfaces

MAP 11csE Plus GPS

Data input: CAN 2.0B; SAE J1939
The VDO Chart Plotter MAP 11csE/MAP 11csE Plus receives data from a CAN 2.0B Interface. Data are transferred at this interface in SAE J1939 format.
You will find the Parameter Group Numbers (PGN) of the data received by the Chart Plotter in the following table. More detailed information can be found in the respective chapters of the SAE J1939 standard.
This standard can be viewed under **http://www.sae.org**.

List of the SAE J1939/71 measuring values — October 1998

Measured value	Chapter No.	PGN
Engine Speed	5.2.1.9	61444
Percent Speed	5.2.1.7	61443
Total Engine Hours	5.2.5.61	65253
Engine Coolant Temperature	5.2.5.5	65262
Fuel temperature	5.2.5.14	65262
Engine Oil Temperature	5.2.5.15	65262
Fuel Delivery Pressure	5.2.5.27	65263
Engine Oil Pressure	5.2.5.28	65263
Fuel Rate (l/h)	5.2.5.63	65266
Boost Pressure	5.2.5.36	65270
Intake Manifold Temperature	5.2.5.4	65270
Exhaust gas temperature	5.2.5.8	65270
Transmission Oil Pressure	5.2.5.24	65272
Transmission Oil Temperature	5.2.5.17	65272
Fuel Level	5.2.5.71	65276
Turbocharger 1 Turbine Inlet Temperature	5.2.5.207	65176
Turbocharger 2 Turbine Inlet Temperature	5.2.5.207	65176
Electrical Potential (Voltage)	5.2.5.75	65271
Battery Potential (Voltage), Switched	5.2.5.77	65271
Battery 2 Potential (Voltage)	5.2.5.254	65165

List of the SAE J1939/71 used — October 1998

Designation	Chapter No.	PGN
Electronic Engine Controller #2	5.3.6	61443
Electronic Engine Controller #1	5.3.7	61444
Engine Hours, Revolutions	5.3.19	65253
Engine Temperature	5.3.28	65262
Engine Fluid Level/Pressure	5.3.29	65263
Cruise Control/Vehicle Speed	5.3.31	65265
Fuel Economy	5.3.32	65266
Inlet /Exhaust Condition	5.3.36	65270
Vehicle Electrical Power	5.3.37	65271
Transmission Fluids	5.3.38	65272
Dash Display	5.3.42	65276
Turbocharger Information #4	5.3.97	65176
Vehicle Electrical Power #2	5.3.110	65165

Easy Link Interface Specifications

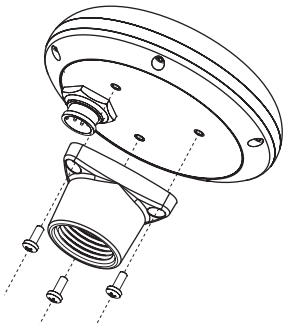
The permissible cable length for the Easy Link Bus is 20 m. The total number of Ocean Link bus indicators connected to the Easy Link Bus may not exceed.

Installing the Smart GPS External

MAP 7w Plus GPS/MAP 11csE Plus GPS/MAP cx Plus GPS

Installing

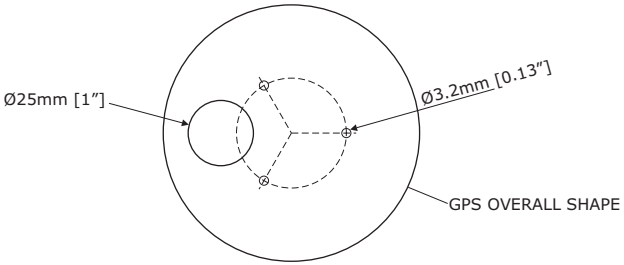
Choose a location for the antenna that has a clear view of the sky. Ensure there are no major obstructions or fixtures in the immediate proximity to the antenna. The antenna relies on direct "line of sight" satellite reception. If you are unsure that the chosen location is suitable it may be advisable to mount the antenna in a temporary manner to verify correct operation. The thread used on the antenna (1", 14 TPI) is an industry standard thread used on a wide range of mounting brackets, including the swivel joints commonly used for angled surfaces. However due to the manufacturing process of these mounting brackets you may see that there is some slop when tightening down the antenna to the bracket. This is of no concern however as the antenna must be tightened until the antenna stops rotating on the antenna mounting bracket.



Installing GPS Antenna (I)

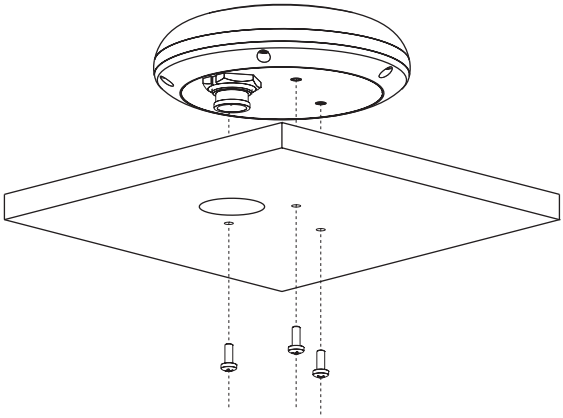
The antenna design also allows an easy flush mounting.

1. Apply the adhesive mounting template sheet in the area that was verified to receive satellite signal well
2. Then, following template instruction, drill a 1" (25mm) hole and three 0.13" (3.2mm) holes



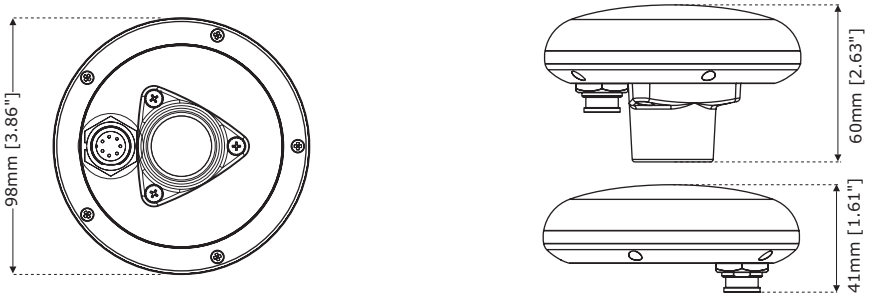
Installing GPS Antenna (II)

3. Remove the template and let the cable go through the central hole
4. Apply a small coat of RTV to the underside of the antenna
5. Place the antenna and then screw it with the three M3 screws



Installing GPS Antenna (III)

Dimensions



GPS Antenna Dimensions

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